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TRAINING MATERIALS AND DATA REQUIREMENTS
FOR COMBAT TRAINING THEATER (CTT)
TRAINING TEST SUPPORT PLAN

ARI FIELD UNIT AT FORT KNOX, KENTUCKY

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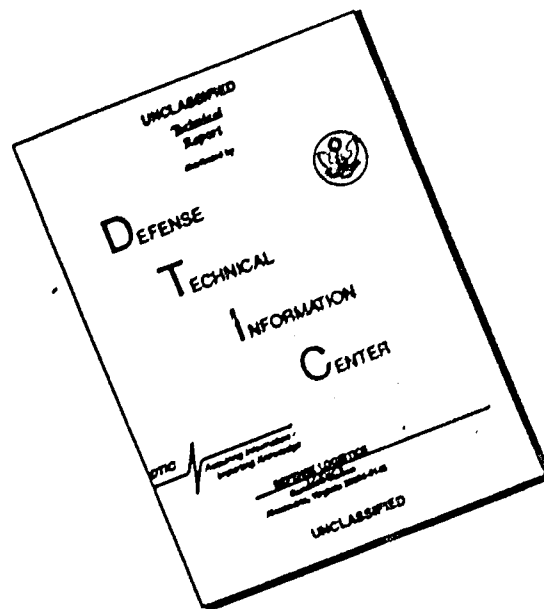


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~~2.~~ 2. What is the transfer effectiveness of the training alternatives?

3. What is the cost of training with each alternative?

**TRAINING MATERIALS AND DATA REQUIREMENTS FOR COMBAT
TRAINING THEATER (CTT) TRAINING TEST SUPPORT PLAN**

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FOREWORD

The Fort Knox Field Unit of the Army Research Institute for the Behavioral and Social Sciences (ARI) carries out research and exploratory development in the area of Armor training. An objective of this work is to develop, through analytic and field research, tank crew and individual training methods that are effective and efficient.

The project of which this report is a part was conducted by personnel of the Human Resources Research Organization (HumRRO) under Contract No. MDA 903-80-C-0223 and monitored by David W. Bessemer. The research was done under ARI FY 79 Work Program, Army Project 2Q762722A764, Training and Education, Task G: Collective Training Concepts in Armor Weapon Systems/Units, Work Unit 3: Simulation Training Capabilities and ARI FY 79 Work Program, Army Project 2Q763743A773, Training Management Systems, Task E: Armor Training Structures, Work Unit 3: Design of Simulation Training Components. The work is responsive to requirements of the U. S. Army Armor School at Fort Knox and the Army Training and Doctrine Command.


JOSEPH ZEIDNER
Technical Director



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BRIEF

Requirement

The material presented in this research product for the Combat Training Theater (CTT) was developed in response to the Independent Evaluation Plan (IEP) test concept to answer three of the operational issues asked in the IEP for the CTT. The three issues are:

1. What is the training effectiveness of the training alternatives (in developing and sustaining main gun engagement proficiency)?
2. What is the transfer effectiveness of the training alternatives?
3. What is the cost of training with each alternative?

Procedure

To evaluate the capabilities of the device to meet these issues, two tests will be conducted. The first test, conducted on M60A1 tanks, compares the CTT to the existing training program and a subcaliber device during OSUT training. The second test, using M60A3 tanks, compares the device to conventional training methods and the UCOFT as a medium for providing sustainment training.

Training materials were developed and data requirements identified for the conduct of the tests. The recommended CTT training program follows the building block approach used in conventional tank gunnery training. The content of the program, however, is intended to express the full capabilities of the CTT and represents the domain of tank gunnery. The domains of gunnery for each tank system were identified and conduct of each program described.

Findings

The domain of M60A3 gunnery was broken down into discrete categories, each broadly defined as a combination of the levels of eight conditions:

1. Fire control mode - stabilized, power, or manual.
2. Method of engagement precision, battlesight, or range card lay to direct fire (RCLDF).
3. Laser rangefinder - operative or inoperative.
4. Periscope reticle - operative or inoperative.
5. Tank thermal sight (TTS) - operative or inoperative.
6. Lead angle sensor - operative or inoperative.
7. Output unit - operative or inoperative.
8. XM21 computer - operative or inoperative.

The nature of the CTT is such that only specific engagement categories can be practiced. These include stationary firing tank engagements fired under daylight conditions when the primary sight reticle or telescope reticle is the available option.

The primary emphasis in OSUT is on the initial acquisition of gunnery skills. Consequently, there is less emphasis on degraded firing mode gunnery than in sustainment training; when the domain of gunnery for M60A1 was identified, fewer discrete engagement categories resulted. They were defined as combinations of the levels of five conditions:

1. Fire control mode - power or manual.
2. Method of engagement - precision, battlesight, or range card lay to direct fire.
3. IR periscope - operative or inoperative.
4. Computer - operative or inoperative.
5. Primary sight - operative or inoperative.

As with the M60A3, only specific M60A1 engagement categories can be practiced. These include engagements fired under daylight conditions when the primary sight reticle or telescope reticle is the available option.

Use of Findings

The material in this document is to be used to answer the three operational issues asked in the IEP for the CTT. The answers will be used in the decision to continue procurement of the CTT for OSUT and sustainment training.

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INTRODUCTION

Recognizing both the potential benefits and the potential risks associated with the use of training devices and simulators as adjuncts and substitutes for operational equipment, the Army has evolved a multi-tiered assessment policy, in which plans and devices are evaluated at successive phases of development, from concept evaluation to operational testing. Certain parts of the Army's device-evaluation policy, namely the parts that deal with the design of baseline and experimental courses of instruction to address operational issues defined in the Independent Evaluation Plan (IEP), and the design and preparation of specifications for elements of the training test support plan (TSP) are interrelated to the extent that one part (the TSP) is "required" by the other part (the IEP).

The material presented in this training TSP for the CTT was developed in response to the IEP test concept to answer three of the operational issues asked in the IEP for the CTT. These answers will be used in the decision to continue procurement of the CTT for OSUT and sustainment training. The three test issues, discussed in more detail below, are:

1. What is the training effectiveness of the training alternatives (in developing and sustaining main gun engagement proficiency)?
2. What is the transfer effectiveness of the training alternatives?
3. What is the cost of training with each alternative?

Training Effectiveness

Training effectiveness refers to the ability of trainees to acquire specified skills on the training device. It includes questions such as: When soldiers are given gunnery sustainment training with the device [e.g., CTT or Scaled Range Target System (SRTS)] are they able to achieve relevant objectives with the device? If so, how much training is necessary for them to achieve these objectives?

How does the amount of training required compare with the amount of training required to achieve comparable objectives with conventional training devices?

Transfer Effectiveness

Once soldiers have acquired specified skills on the training device, it is necessary to determine whether these skills contribute to the soldiers' performance with operational equipment. Transfer effectiveness refers to the transfer of skills from the device (e.g., CTT or SRTS) to the operational equipment, in the case of the M60 series tank. It includes such questions as: After soldiers have been given gunnery sustainment training with the devices, how well do they perform with the M60A3? How does this compare with the performance of soldiers given comparable training with conventional training? If the performance of the CTT- or SRTS-trained soldiers is less than adequate, how much training with the M60A1 is necessary to correct the deficiency? How does the amount of M60A3 training required for the device-trained soldiers compare to the M60A3 training required for soldiers trained with the conventional training program?

Cost of Training

An assessment of the cost of training must consider two factors. First, what material resources (e.g., target vehicles, ammunition) are necessary? Second, what personnel resources (e.g., instructors, maintenance personnel, etc.) are necessary?

ORGANIZATION

The training materials and data requirements are organized as follows:

Chapter 1 - Training Concepts for CTT

Chapter 2 - Data Requirements

CHAPTER ONE

TRAINING CONCEPTS FOR CTT

OVERVIEW

The Detras Combat Training Theater (CTT) is a film-based training device intended to be used in conjunction with an M60A1 or M60A3 tank to provide: (1) initial training in basic gunnery skills to armor crew gunners, and (2) sustainment training in these skills. To evaluate the actual capabilities of the CTT to meet these intentions, the device will be subjected to two tests, developed to yield maximum data to address training effectiveness, transfer effectiveness, and cost of training, as part of the Independent Evaluation Plan (IEP) process. The first test will compare the CTT to the existing training program and a subcaliber device (i.e., the Scaled Range Target System) during OSUT training; the second will compare the device to conventional training methods and the UCOFT as a medium for providing sustainment training.

Three groups will be employed during OSUT. These are:

Group IA: Tank gunnery training train-up with conventional devices.

Group IIA: Tank gunnery train-up training with the CTT.

Group IIIA: Tank gunnery train-up training with the SRTS, equated to the CTT training.

The baseline program (Group IA) will employ conventional training. The experimental groups (Groups IIA and IIIA) will use either the CTT or the SRTS in lieu of conventional training devices and methods.

The sustainment training test will also employ three groups:

Group IB: Tank gunnery sustainment training with conventional devices.

Group IIB: Tank gunnery sustainment training with the CTT.

Group IIIB: Tank gunnery sustainment training with the UCOFT.

The baseline training program (Group IB) will employ conventional training. The experimental training groups (Groups IIB and IIIB) will follow a comparable program of instruction but will use the CTT or UCOFT for training.

TRAINING DESIGN

OSUT

The recommended training design for the three OSUT groups include the sequences shown in Table 1. A pre-test will be given for the three groups on the M60A1 tank dry-fired on an instrumented range to determine entry-level job proficiency. Each group will be pre-tested on its respective device to determine entry-level proficiency on the device. Group IA will then participate in the conventional OSUT program. Groups IIA and IIIA will participate in the conventional OSUT program modified as recommended in this TSP. The amount of time and resources necessary to meet the program objectives will be tracked during program administration. At the conclusion of training, each group will be post-tested on its respective device, and then on the M60A1 tank dry-fired on an instrumented range. The data requirements for all phases of the program are presented in Chapter 2.

Sustainment

The recommended training design for the sustainment training groups includes the sequences shown in Table 2. All groups will be given a pre-test on the M60A3 tank by live-firing Tables VII(c) and VIII. Each group will receive a pre-test on its respective device to determine the entry-level proficiency on the device. Group IB will then participate in the

Table 1.--Recommended Training Design (OSUT)

Group IA (Conventional)	Group IIA (CTT)	Group IIIA (SRTS)
Pre-test on M60A1 Tables VI, VII (Mod)	Pre-test on M60A1 Tables VI, VII (Mod)	Pre-test on M60A1 Tables VI, VII (Mod)
Pre-test on device (M60A1)	Pre-test on device (CTT)	Pre-test on device (SRTS)
Conventional training program	Modified gunnery training program	Modified gunnery training program
Post-test on device (M60A1)	Post-test on device (CTT)	Post-test on device (SRTS)
Post-test on M60A1 Tables VI, VII (Mod)	Post-test on M60A1 Tables VI, VII (Mod)	Post-test on M60A1 Tables VI, VII (Mod)

Table 2.--Recommended Training Design (Sustainment)

Group IB (Conventional)	Group IIB (CTT)	Group IIIB (UCOFT)
Pre-test on M60A3 Tables VII(c), VIII	Pre-test on M60A3 Tables VII(c), VIII	Pre-test on M60A3 Tables VII(c), VIII
Pre-test on device (M60A3 tank)	Pre-test on device (CTT)	Pre-test on device (UCOFT)
Conventional sustainment training Tables II-IV	Modified gunnery sustainment training program	Contractor- developed training exercises
Post-test on device (M60A3 tank)	Post-test on device (CTT)	Post-test on device (UCOFT)
Post-test on M60A3 Tables VII(c), VIII	Post-test on M60A3 Tables VII(c), VIII	Post-test on M60A3 Tables VII(c), VIII

conventional sustainment training program. Group IIB will receive the modified gunnery sustainment training program recommended in this TSP, and Group IIIB will receive UCOFT contractor-developed training exercises equated to Group IIB training. The amount of time and resources necessary to meet the program objectives will be tracked during program administration. At the conclusion of training, each group will be post-tested on its respective device. Finally, the groups will be post-tested on the M60A3, live-firing Tables VII(c) and VIII. The data requirements for all phases of the program are presented in Chapter 2.

Assumptions

Several assumptions have been made in the design of the TSP. They are:

1. The CTT OSUT program is intended primarily to train gunners. The sustainment program is intended to train TC's and gunners.
2. The OSUT test program is limited by scheduled time available in the current training schedule. All groups will receive current gunnery classroom training. CTT and SRTS training will occur during times normally scheduled for gunnery (range) practice. Consequently, total CTT and SRTS training time will be limited to 2.5 hours of gunnery exercises per man.
3. It is assumed that tank commanders and gunners will have been trained in the M60A3 prior to assignment to a sustainment test group. The time available for sustainment training has not been specified. Thus, the recommended CTT sustainment training program represents the optional gunnery program.

4. Because of the CTT design, training will be limited to stationary firing vehicle engagements. These are currently represented by Tables I-IV. CTT training will not be limited to these Tables, however, That is, to demonstrate the full capabilities of the device, training representing a broader portion of the M60A1 and M60A3 gunnery domains than the Tables will be presented.
5. The scope of training provided by the CTT is bounded by equipment limitations; e.g., the CTT cannot provide main gun zeroing practice. Gunnery skills which cannot be trained on the CTT must be trained using conventional methods.
6. The domains of M60A1 and M60A3 tank gunnery can be specified and sampled. For a detailed description and rationale of approaches to defining the gunnery domain, see: Wheaton, G.R., Fingerman, P.W., and Boycan, G.G. Development of a Model Tank Gunnery Test. Alexandria, Va.: U.S. Army Research Institute for the Behavioral Social Sciences (ARI), 1978; or, Boldovici, J.A., Boycan, G.G., Fingerman, P.W., and Wheaton, G.R. Tank Gunnery Data Handbook. Washington, D.C.: American Institute for Research in the Behavioral Sciences (AIR), AIR-55800-9/78-TR, 1978.

Test Participants and Dates

The test participants and the dates of participation cannot be determined at this time.

TRAINING MATERIALS

Overview

The emphasis during OSUT is on the initial acquisition and development of tank gunnery skills. In the current training programs this is addressed through a program of instruction which includes a sequential progression by the trainees through gunnery Tables I-VII (see FM 17-12). The program uses a building block approach to gunnery skill development. That is, at each step (i.e., Table) in the progression the trainee is learning new skills or subskills which are required to demonstrate proficiency on the following Tables.

The trainee begins with very basic but essential skills in Table I (e.g., zeroing the main gun, or manipulating the main gun), thus laying the foundation for the remainder of his training. In Tables II-VII he learns the basic skills of gunnery (e.g., leading moving targets, or performing various forms of second round adjustment procedures) while at the same time the difficulty of the engagements is constantly increasing, from single, stationary target - stationary firing platform engagements early in training to multiple, moving targets - moving firing platform engagements (for stabilized tanks) in the later Tables. In these later Tables the trainee is also exposed to the concept of working as a member of a tank crew.

Sustainment training, conversely, emphasizes the refreshment and advanced development of existing gunnery skills. That is, sustainment training is concerned less with individual gunnery skills and subskills, and more with the coordination of these skills into the behaviors which contribute to proficient tank gunnery. As with OSUT, gunnery Tables I-VII provide the principal training mechanism.

The recommended CTT training program follows the building block approach used in conventional tank gunnery training. The content of the training program, however, is intended to express the full capabilities of the CTT and has been expanded beyond the existing Tables to represent the domain of tank gunnery. Because the OSUT and sustainment training programs emphasize different content, the proposed programs are presented separately below.

Sustainment Training Materials

The domain of M60A3 tank gunnery engagements can be broken down into discrete categories. Each category is broadly defined as a combination of the levels of eight conditions, as follows:

- Fire Control Mode - Stabilized, Power, or Manual
- Method of Engagement - Precision, Battlesight, or Range Card Lay to Direct Fire (RCLDF).
- Laser Rangefinder - Operative or Inoperative
- Periscope Reticle - Operative or Inoperative
- Tank Thermal Sight (TTS) - Operative or Inoperative
- Lead Angle Sensor - Operative or Inoperative
- Output Unit - Operative or Inoperative
- XM21 Computer - Operative or Inoperative

After deleting combinations that are not rational, and combining into single categories combinations that have identical impact on gunnery, 44 categories remain. Table 3 presents the 44 engagement categories and the combinations of levels of conditions that define each. (The circles around certain category numbers will be explained momentarily). Each category can be expanded as in Figure 1, where the firing tank conditions are represented by a "+" in the appropriate condition level. The firing tank conditions that are given in Table 3 can be evaluator controlled during training and testing. The target conditions for any engagement category are defined by combining the firing tank conditions for an engagement category with levels of the permissible target conditions, shown in Figure 2.

TABLE 3
M60A3 TANK GUNNERY
ENGAGEMENT CATEGORIES

FIRE CONTROL SYSTEM FAILURE											
Fire Control Mode	None	Periscope Reticle		TTS	Lead Angle	Periscope Reticle & Lead Angle		TTS & Lead Angle	Periscope Reticle & TTS & Lead Angle		Output Unit or Computer
	ENGAGEMENT CATEGORY										
<u>OPERATIVE LRF</u>											
<u>STABILIZED</u>											
Precision	1	2	3							4	
POWER											
Precision	5	6	7	8	9	10	11	12	13	14	
RCLDF			12						13	14	
MANUAL											
Precision									15		
RCLDF									16		
<u>INOPERATIVE LRF</u>											
<u>STABILIZED</u>											
Precision	17	18	19							20	
Battlesight	21	22	23							24	
POWER											
Precision	25	26	27	28	29	30	31	32	33	34	
Battlesight	32	33	34	35	36	37	38	39	40	41	
RCLDF			39						40	41	
MANUAL											
Precision									42		
Battlesight									43		
RCLDF									44		

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 7

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____ + _____		
S _____ + _____	POWER _____ + _____			MANUAL _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____ + _____	_____ + _____	_____ + _____	_____ + _____
MALFUNCTION	_____	_____ + _____	_____	_____	_____	_____

Figure 1. Sample display for engagement category 7.

TARGET CONDITIONS

		TGT NO.		
		Single	Multiple	
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
	S	L to R	<500	Full
	<15kph	R to L	600-1600	Partial
	15-30kph	Advancing	1601-3200	Defilade
	>30kph	Retreating	>3200	Concealed
Target No. 2	S	L to R	<500	Full
	<15kph	R to L	500-1600	Partial
	15-30kph	Advancing	1601-3200	Defilade
	>30kph	Retreating	>3200	Concealed
Target No. 3	S	L to R	<500	Full
	<15kph	R to L	500-1600	Partial
	15-30kph	Advancing	1601-3200	Defilade
	>30kph	Retreating	>3200	Concealed

Figure 2. Levels of permissible target conditions.

The nature of the CTT is such that only specific engagement categories can be practiced with the device. These are circled on Table 3 and include stationary firing tank engagements fired under daylight conditions when the primary sight reticle or telescope reticle is the available option. The RCLDF engagements can be practiced with the CTT only if a night film with indirect illumination is provided. The fifteen unique engagement categories circled on Table 3 are presented in tabular form in Appendix A. these are the categories from which objectives will be prepared for sustainment training and testing.

Current sustainment gunnery training progresses through a sequence from single, stationary targets through multiple moving targets. The CTT training program is intended, within constraints, to follow this general approach. Sustainment training should be conducted in three phases, with each phase comprising 15 objectives (one from each engagement category). The objectives in the phases progress from "easier" to "more difficult". Phase I objectives focus on stationary or "simple" moving target gunnery. The objectives in Phase II should contain multiple target moving gunnery and Phase III will emphasize multiple, fast moving targets. The gunnery objectives for engagement category 7, Phases I, II, and III are presented in Figures 3, 4, and 5 respectively. The 45 objectives for the CTT sustainment program are contained in Appendix B. The objectives were derived to allow for evaluator control for the equated training groups (IIB, IIIB) in terms of weapon firing conditions of the fire control system, fire control mode, and the target ranges for an engagement.¹

¹Types of targets and ranges will be controlled by selecting the CTT film scenario associated with the specific objective.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 7
Objective 1, Phase I

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRP</u>
FUNCTION	+ _____	_____	+ _____	+ _____	+ _____	+ _____
MALFUNCTION	_____	+ _____	_____	_____	_____	_____

<u>TARGET CONDITIONS</u>				
				<u>TGT NO.</u>
				Single + _____
				Multiple _____
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
	S + _____	L to R _____	<500 _____	Full + _____
	<15kph _____	R to L _____	500-1600 + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIGURE 3. Gunnery objective for engagement category 7, Phase I

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 7
Objective 16 Phase II

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
N	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	+ _____	_____	+ _____	+ _____	+ _____	+ _____
MALFUNCTION	_____	+ _____	_____	_____	_____	_____

<u>TARGET CONDITIONS</u>				
			<u>TGT NO.</u>	
			Single _____	
			Multiple + _____	
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
	S + _____	L to R _____	<500 _____	Full + _____
	<15kph _____	R to L _____	500-1600 + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R + _____	<500 _____	Full _____
	<15kph + _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade + _____
	>30kph _____	Retreating _____	>3200 + _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIGURE 4. Gunnery objective for engagement category 7, Phase II.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 7
Objective 31 Phase III

FIRING TANK CONDITIONS						
TANK MOTION		TURRET		CONTROLS		
M	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRP</u>
FUNCTION	+ _____	_____	+ _____	+ _____	+ _____	+ _____
MALFUNCTION	_____	+ _____	_____	_____	_____	_____

TARGET CONDITIONS				
				TGT NO.
				Single _____
				Multiple + _____
	TGT MOTION	TGT DIRECTION	RANGE(M)	EXPOSURE
Target No. 1	S + _____	L to R _____	<500 _____	Full + _____
	<15kph _____	R to L _____	500-1600 + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R + _____	<500 _____	Full _____
	<15kph + _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade + _____
	>30kph _____	Retreating _____	>3200 + _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L + _____	500-1600 _____	Partial + _____
	15-30kph + _____	Advancing _____	1601-3200 + _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIGURE 5. Gunnery objective for engagement category 7, Phase III

The firing ranges for the M60A3 pre-test and posttest firing must be set up as appropriate for Tables VII (c) and VIII, or to accommodate the recommended test objectives specified in the M60A3 Pretest and Posttest section found later in this document. This involves arranging appropriate combinations of target types and ranges in specified numbers (single, multiple) at the various firing positions. At the same time, depending on the objective being fired, the evaluator must introduce the indicated malfunction(s) into the fire control system. These malfunctions should be introduced in such a way as to ensure that the gunner and TC will be unaware until the malfunction occurs at the "real world" point in the engagement sequence.

OSUT Materials

The primary emphasis in OSUT is on the initial acquisition of gunnery skills. Consequently, there is less emphasis on degraded firing mode gunnery than in sustainment training and, when applying the method described above for specifying the gunnery domain, there are fewer discrete engagement categories. These will be defined as combinations of the levels of five conditions, as follows:

- Fire Control Mode - Power or Manual
- Method of Engagement - Precision, Battlesight, or Range Card Lay to Direct Fire
- IR Periscope - Operative or Inoperative
- Computer - Operative or Inoperative
- Primary Sight - Operative or Inoperative

After deleting combinations that are not rational, and combining into single categories combinations that have identical impact on gunnery, 30 categories remain. Table 4 presents the 30 engagement categories and the combinations of levels of conditions that define each. As in the case of the M60A3, only specific M60A1 engagement categories can be practiced. These are circled on Table 4 and again include engagements fired under daylight conditions when the primary sight reticle or telescope reticle is the available option. The ten unique engagement categories circled on Table 4 are presented in tabular form in Appendix C. These are the categories from which objectives will be prepared for OSUT.

TABLE 4
M60A1 TANK GUNNERY
ENGAGEMENT CATEGORIES

FIRE CONTROL SYSTEM FAILURE	
Fire Control Mode	<div>None</div> <div>IR</div> <div>Computer</div> <div>IR & Computer</div> <div>Primary Sight</div>
<u>OPERATIVE SRF</u>	<u>ENGAGEMENT CATEGORY</u>
POWER	
Precision	1 ① 2 2 ③
Battlesight	4 ④ 4 4 ⑤
RCLDF	6 7 8
MANUAL	
Precision	9 ⑨ 10 ⑩ ⑪
Battlesight	12 ⑫ 12 ⑬ ⑭
RCLDF	14 15 16
<u>INOPERATIVE SRF</u>	
POWER	
Precision	17 17 18
Battlesight	19 19 19 19 20
RCLDF	21 22 23
MANUAL	
Precision	24 24 25
Battlesight	26 26 36 26 27
RCLDF	28 29 30

The CTT OSUT program is intended to follow the progression of the conventional program from "simple" to "complex" engagements. It is recommended that OSUT be conducted in two Phases with each phase comprising ten objectives (one from each engagement category). Phase I objectives will focus on stationary or "simple" moving target gunnery. Phase II will contain more moving target engagements, including multiple, fast-moving targets. The 20 objectives for the CTT OSUT program are contained in Appendix D.

These objectives were derived to allow for evaluator control for the equated training groups (IIA, IIIA) in terms of weapon firing conditions of the fire control system, the fire control mode, and ranges for an engagement.

The firing ranges for the M60A1 pretest and posttest firing must be set up as appropriate for Tables VI and VII (mod). This involves the steps defined for the sustainment training program as described previously. Additionally, the evaluator must introduce the indicated malfunction(s) at the appropriate time.

CONDUCT OF TRAINING PROGRAMS

This section describes the recommendations for conduct of the operational tank pretests, device pretests, training exercises, device posttests, and operational tank posttests for all six training groups.

OSUT M60A1 Pretest

Tank gunnery Tables VI (mod) and VII (mod) should be used as the content of the M60A1 pretest. If time permits, these should be expanded to include the following objectives:

1	11
3	13
5	15
7	17
9	19

Gunners should fire each Table and objective only once and the times and aiming errors should be recorded on the OSUT Gunnery Objective Scoresheet (See Chapter 2).

OSUT Device Pretest

The following objectives are the content of the Device Pretest:

2	12
4	14
6	16
8	18
10	20

Group IA should dry-fire the M60A1 tank on a firing range set up so that the ten objectives can be fired as described.

Gunners should fire each objective only once and the times and aiming errors should be recorded (See Chapter 2).

OSUT Training Exercises

All 20 objectives should be practiced in order as presented in Appendix D. However, gunner's should practice an objective until they achieve mastery on the objective or until they have fired the objective three times before proceeding to the next objective. The firing information that should be recorded is described in Chapter 2.

OSUT Device Posttest

In the interest of test security, the objectives recommended for device posttest will remain confidential until two weeks before the posttest. As for the device pretests, each objective should be fired only once and the information recorded.

OSUT M60A1 Posttest

In the interest of test security, the objectives recommended for the M60A1 posttest will remain confidential until two weeks before the posttest. The procedure will be for each gunner to fire an objective until achieving mastery (or until the objective is fired five times) before proceeding to the next objective on the posttest. All firing information should be recorded for each attempt.

Sustainment Training M60A3 Pretest

Tank gunnery Tables VII(c) and VIII should be used as the content of the M60A3 pretest. In addition, the following objectives from Appendix B) should be used:

6	28
11	30
12	34
16	35
23	39

Crews should fire each Table and objective only once and the times and aiming errors should be recorded on the Sustainment Gunnery Objective Scoresheet (See Chapter 2). In addition, objectives representing engagement categories 5, 6, 25, 26, 32, and 33 should be fired here and in the posttest. This approach provides information regarding the generalizability of the objectives. These six objectives are presented in tabular form in Appendix E.

Sustainment Training Device Pretest

The following objectives should be used as the content of the device pretest:

4	27
9	29
13	32
18	37
20	40

Crews should fire each Table and objective only once and the times and aiming errors should be recorded on the Sustainment Gunnery Objective Scoresheet (See Chapter 2).

Sustainment Training Exercises

All 45 objectives should be practiced in order as presented in Appendix B. However, a crew should practice an objective until it achieves mastery on the objective or fires the objective three times before proceeding to the next objective. The firing information that should be recorded is discussed in Chapter 2.

CHAPTER TWO

DATA REQUIREMENTS

In order to evaluate the OSUT and sustainment gunnery training programs, data are needed in three areas:

- o Training Resource Requirements
- o Training Effectiveness
- o Training Transfer

TRAINING RESOURCE REQUIREMENTS

Overview

This information will be used to estimate the costs associated with developing and implementing each of the three training alternatives of the two separate training programs (OSUT and sustainment). The forms provided in Appendix F should be used to report the information. Explanations of the entries required for each form follow.

Personnel Requirements (OSUT)

This form should be completed for each person involved in setting up or running any part of the OSUT program. Give the person's name, rank/grade and primary MOS. Then for each function in which the person was involved (Planning, Development, Conduct and/or Evaluation) and each training group for which the person performed that function (Group IA, IIA, IIIA), place a P (Primary) or S (Support) in the column headed "Role" to indicate the person's responsibilities. In the column headed "Time" indicate the number of hours the person spent in each role.

The functions are defined as follows:

- Planning - scheduling, determining requirements for and obtaining personnel and equipment, logistics, etc.

- Development - writing and review of lesson plans, scenarios, test materials, etc.
- Conduct - actual training time
- Evaluation - pre-testing and post-testing on the operational tank and alternative training devices (or method of instruction)

The three OSUT groups are:

- Group IA - baseline, unmodified current training
- Group IIA - training with the CTT
- Group IIIA - training with the SRTS

The two roles are defined as follows:

- Primary - directed or was responsible for major portions of the work in a given function
- Support - assisted or was under the supervision of someone in a primary role. (If the person was not involved in a function for a training group, the corresponding lines in the "Role" and "Time" columns should be left blank.)

If the effort is for more than one training group or function, record the hours in as many places as are applicable and attach a note telling how many hours have been recorded in more than one place and for which groups and functions they are recorded.

Personnel Requirements (Sustainment Training)

This form is nearly identical to the OSUT form described above, and should be filled out in the same manner for each person involved in the set-up or execution of the sustainment training program.

The three sustainment training groups are:

- o Group IB - baseline, unmodified current training
- o Group IIB - training with the CTT
- o Group IIIB - training with the UCFT

Gunnery Training Report Form (OSUT)

This form should be completed for each trainee (gunner). The header portion requires the training group, the gunner's Alpha number and the gunner's name.

The body of the form is to be used to log the gunner's activities during training. For each objective on which training is received, record the date and time the gunner started training on the objective, the date and time it was mastered, total number of attempts and the total time spent on the objective. The objectives to be included in training are discussed in Chapter 1 and included in Appendix D. The criteria for mastery are included on the Gunnery Objective Scoresheet, Appendix F.

Gunnery Training Report Form (Sustainment Training)

This form should be completed for each gunner/commander crew. The header portion requires the training group, the assigned crew number (any number up to three digits), name of each crew member, how long each has been in that crew position and how many times they have fired together in those positions.

The body of the form is to be used to log the crew's activities during training. For each objective on which the crew receives training, record the date and time the crew started training on the objective, the date and time it was mastered, total number of attempts and the total time spent on the objective. The objectives to be included in training and the criteria for mastery are discussed in Chapter 1 and included in Appendixes B and E.

TRAINING EFFECTIVENESS

OSUT

Relative training effectiveness of the three alternative programs will be measured by means of comparisons between pre- and post-training test results. Each gunner will be tested at both points on the device (M60A1 tank, CTT, or SRTS) on which it receives gunnery training. The objectives which comprise the tests and the measurement requirements for each objective are discussed in Chapter 1 and Appendix D.

For each objective, a scoresheet should be prepared by completing the column "Mastery Standard" for the applicable criteria for the objective. (See sample scoresheet format, Appendix F.) Device pretest and posttest results for each gunner should be recorded on this scoresheet. The data are to be obtained as described above, with the aid of a gun camera (for dry-fire) and a stopwatch for Group IA, and from direct observation and a stopwatch for Groups IIA and IIIA. Actual times (seconds), and aiming error (mils deflection and elevation or hit/suppression and rounds expended) should be recorded for each objective.

Sustainment Training

A similar procedure will be used to determine training effectiveness of the three sustainment training device alternatives. Crews will be tested at both points on the training device (M60A3 tank, CTT, or UCOFT). The objectives which comprise the tests and the measurement requirements are discussed in Chapter 1 and Appendix B.

Results should be recorded on the Gunnery Objective Scoresheets. The data are to be obtained as described above, with the aid of a gun camera (for dry fire) and a stopwatch for Group IB, from

direct observation and a stopwatch for Group IIB, and from UCOT performance analyses for Group IIIB. Actual times (seconds), and aiming errors (mils deflection and elevation or hit/suppression and rounds expended) should be recorded for each objective.

TRAINING TRANSFER

OSUT

The relative effectiveness of the three training alternatives in increasing proficiency on the M60A1 tank (i.e., training transfer) will be expressed as the difference among the three training groups in number of trials needed to master certain task objectives. A pretest on the M60A1 tank will be given before the device pretest, to determine entry level skills. The transfer test itself will be conducted after the device posttest, also on the M60A1 tank. Conduct of these tests is discussed in Chapter 1.

For the M60A1 pretest, the measures should be recorded as for the device pretests and posttests. For the M60A1 posttest, the measures should be recorded in the same way for each attempt of an objective by the gunner. Each objective must be attempted until mastery is demonstrated on all criteria measures, or until five attempts are made.

Sustainment Training

A similar approach will be used to evaluate the sustainment training alternatives. A pretest on the M60A3 tank will be given prior to the device pretest. The transfer test itself will also be conducted using the M60A3. Conduct of the tests is discussed in Chapter 1.

Measures should be recorded in the same manner proposed for the OSUT evaluation.

Sustainment Training Device Posttest

In the interests of test security, the objectives recommended for device posttest will remain confidential until two weeks before the posttest. As for the device pretest, each objective should be fired only once and the information recorded.

Sustainment Training M60A3 Posttest

In the interests of test security, the objectives recommended for the M60A3 posttest will remain confidential until two weeks before the posttest. The procedure will be for each crew to fire an objective until achieving mastery (or until the objective is fired five times) before proceeding to the next objective on the posttest. All firing information should be recorded for each attempt.

APPENDIX A

**M60A3 STATIONARY FIRING TANK
ENGAGEMENT CATEGORIES**

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 7

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____ +		
S _____ +	POWER _____ +			MANUAL _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ +	_____	_____ +	_____ +	_____ +	_____ +
MALFUNCTION	_____	_____ +	_____	_____	_____	_____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 8

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ +	
S _____ +	POWER _____ +				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ +	_____ +	_____	_____ +	_____ +	_____ +
MALFUNCTION	_____	_____	_____ +	_____	_____	_____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 10

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	+	_____
S	_____ + _____	POWER	_____ + _____	MANUAL	_____	_____
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____	_____ + _____	_____ + _____	_____ + _____
MALFUNCTION	_____	_____ + _____	_____ + _____	_____	_____	_____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 11

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____ + _____		
S _____ + _____	POWER _____ + _____			MANUAL _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____ + _____
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____

NOTES:

1. Two fire control system failure categories are covered by engagement category 11. They are:
 - ..Periscope reticle & TTS & lead angle.
 - ..Output unit or computer.
2. The engagement proceeds as follows:
 - . Turn computer OFF.
 - . Turn laser emergency power switch on electronics unit ON.
 - . TC ranges with laser in ON mode and announces range.
 - . Engage with telescope.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 15

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL <u>+</u> _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____ + _____	_____ + _____	_____ + _____
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____	_____	_____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 27

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____ +		
S _____ +	POWER _____ +			MANUAL _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ +	_____	_____ +	_____ +	_____ +	_____
MALFUNCTION	_____	_____ +	_____	_____	_____	_____ +

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 28

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____ + _____		
S _____ + _____	POWER _____ + _____			MANUAL _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____ + _____	_____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____	_____ + _____	_____	_____	_____ + _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 30

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____ +		
S _____ +	POWER _____ +			MANUAL _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ +	_____	_____	_____ +	_____ +	_____
MALFUNCTION	_____	_____ +	_____ +	_____	_____	_____ +

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 31

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____ + _____		
S _____ + _____	POWER _____ + _____			MANUAL _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____

NOTE: Two fire control system failure categories are covered by engagement category 31.
They are:

- . Periscope reticle & TTS & lead angle.
- . Output unit or computer.

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 34

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>		<u>TURRET</u>			<u>CONTROLS</u>	
M	_____	STAB _____			POWER _____ +	
S	_____ +	POWER _____ +			MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ +	_____	_____ +	_____ +	_____ +	_____
MALFUNCTION	_____	_____ +	_____	_____	_____	_____ +

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 35

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____ + _____	_____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____	_____ + _____	_____	_____	_____ + _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 37

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____	+
S _____	POWER _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	_____	_____	_____	_____	_____	_____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 38

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	+ _____	+ _____	+ _____	+ _____	+ _____	+ _____

NOTE: Two fire control system failure categories are covered by engagement category 38.

They are:

- . Periscope reticle & TTS & lead angle.
- . Output unit or computer.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 42

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____		
S <u>+</u> _____	POWER <u>+</u> _____			MANUAL <u>+</u> _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	<u>+</u> _____	<u>+</u> _____	_____
MALFUNCTION	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	_____	_____	<u>+</u> _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 43

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>			<u>CONTROLS</u>		
M _____	STAB _____			POWER _____		
S + _____	POWER + _____			MANUAL + _____		
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____	_____	_____ + _____

APPENDIX B

M60A3 GUNNERY ENGAGEMENTS FOR CTT

PHASE I	PAGE B-2
PHASE II	PAGE B-18
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PHASE I

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 7
Objective 1, Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>		<u>CONTROLS</u>			
M _____	STAB _____		POWER <u>+</u> _____			
S <u>+</u> _____	POWER <u>+</u> _____		MANUAL _____			
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u> _____	_____	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____
MALFUNCTION	_____	<u>+</u> _____	_____	_____	_____	_____

TARGET CONDITIONS

		<u>TGT NO.</u>	
		Single <u>+</u> _____	Multiple _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE (M)</u>
Target No. 1	S <u>+</u> _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 <u>+</u> _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
Target No. 2	S _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
Target No. 3	S _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
			<u>EXPOSURE</u>
			Full <u>+</u> _____
			Partial _____
			Defilade _____
			Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 8
Objective 2 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	+ _____	+ _____	_____	+ _____	+ _____	+ _____
MALFUNCTION	_____	_____	+ _____	_____	_____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	+ _____
					Multiple	_____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S _____	L to R _____	<500 _____	Full _____		
	<15kph + _____	R to L + _____	500-1600 + _____	Partial + _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 2	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 3	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 10
Objective 3 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
N	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	+ _____	_____	_____	+ _____	+ _____	+ _____
MALFUNCTION	_____	+ _____	+ _____	_____	_____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	+ _____
					Multiple	_____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S _____	L to R + _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial + _____		
	15-30kph + _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 + _____	Concealed _____		
Target No. 2	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 3	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 11
Objective 4 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER <u>+</u>	
S <u>+</u>	POWER <u>+</u>				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	<u>+</u>	<u>+</u>	<u>+</u>	_____

TARGET CONDITIONS

				<u>TGT NO.</u>
				Single <u>+</u>
				Multiple _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full <u>+</u>
	<15kph _____	R to L <u>+</u>	500-1600 _____	Partial _____
	15-30kph <u>+</u>	Advancing _____	1601-3200 <u>+</u>	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

NOTE: Two fire control system failure categories are covered by engagement category 11. They are:
 . Periscope reticle & TTS & lead angle.
 . Output unit or computer.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 15
Objective 5 Phase 1

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	_____	
S	<u>+</u>	POWER	<u>+</u>	MANUAL	<u>+</u>	

	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	<u>+</u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	<u>+</u>	_____	_____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	<u>+</u>
					Multiple	_____
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
	S	L to R	<500	Full		
	<15kph <u>+</u>	R to L	500-1600 <u>+</u>	Partial <u>+</u>		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating <u>+</u>	>3200	Concealed		
Target No. 2	S	L to R	<500	Full		
	<15kph	R to L	500-1600	Partial		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating	>3200	Concealed		
Target No. 3	S	L to R	<500	Full		
	<15kph	R to L	500-1600	Partial		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating	>3200	Concealed		

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 27
Objective 6 Phase 1FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u> _____	_____	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	_____
MAI FUNCTION	_____	<u>+</u> _____	_____	_____	_____	<u>+</u> _____

TARGET CONDITIONS

<u>TGT NO.</u>				
Single <u>+</u> _____				
Multiple _____				
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u>+</u> _____	L to R _____	<500 _____	Full <u>+</u> _____
	<15kph _____	R to L _____	500-1600 <u>+</u> _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 28
Objective 7 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>O'UTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	+ _____	+ _____	_____	+ _____	+ _____	_____
MALFUNCTION	_____	_____	+ _____	_____	_____	+ _____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	+ _____
					Multiple	_____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S _____	L to R _____ +	<500 _____	Full _____		
	<15kph _____ +	R to L _____	500-1600 _____ +	Partial _____ +		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 2	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 3	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 30
Objective 8 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
N	_____	STAB	_____	POWER	_____ + _____	
S	_____ + _____	POWER	_____ + _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____ + _____	_____ + _____	_____	_____	_____ + _____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	_____ + _____
					Multiple	_____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____ + _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____ + _____	1601-3200 _____ + _____	Defilade _____ + _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 2	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 3	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 31
Objective 9 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER <u>+</u>	
S <u>+</u>	POWER <u>+</u>				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	<u>+</u>	<u>+</u>	<u>+</u>	<u>+</u>	<u>+</u>	<u>+</u>

TARGET CONDITIONS

		<u>TGT NO.</u>	
		Single <u>+</u>	Multiple _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>
Target No. 1	S _____	L to R _____	<500 _____
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 <u>+</u>
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
			<u>EXPOSURE</u>
			Full _____
			Partial <u>+</u>
			Detachable _____
			Concealed _____
Target No. 2	S _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
			Full _____
			Partial _____
			Detachable _____
			Concealed _____
Target No. 3	S _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
			Full _____
			Partial _____
			Detachable _____
			Concealed _____

NOTE: Two fire control system failure conditions are covered by engagement category 11.
They are:

- Periscope vehicle & TTS & LRF & output
- Output unit or computer

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 34
Objective 10 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____ + _____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____ + _____	_____	_____	_____	_____ + _____

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
				<u>TGT NO.</u> Single _____ + _____ Multiple _____
Target No. 1	S _____ + _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ + _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ + _____ Defilade _____ Concealed _____
Target No. 2	S _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 35
Objective 11 Phase I

FIRING TANK CONDITIONS

TANK MOTION

M _____

S + _____

TURRET

STAB _____

POWER + _____

CONTROLS

POWER + _____

MANUAL _____

PERISCOPE

TTS

LEAD

OUTPUT

COMPUTER

LRF

FUNCTION

+ _____

+ _____

+ _____

+ _____

MALFUNCTION

+ _____

+ _____

TARGET CONDITIONS

TGT NO.

Single + _____

Multiple _____

Target No. 1

TGT MOTION

S _____

<15kph + _____

15-30kph _____

>30kph _____

TGT DIRECTION

L to R _____

R to L + _____

Advancing _____

Retreating _____

RANGE(M)

<500 _____

500-1600 + _____

1601-3200 _____

>3200 _____

EXPOSURE

Full _____

Partial + _____

Defilade _____

Concealed _____

Target No. 2

S _____

<15kph _____

15-30kph _____

>30kph _____

L to R _____

R to L _____

Advancing _____

Retreating _____

<500 _____

500-1600 _____

1601-3200 _____

>3200 _____

Full _____

Partial _____

Defilade _____

Concealed _____

Target No. 3

S _____

<15kph _____

15-30kph _____

>30kph _____

L to R _____

R to L _____

Advancing _____

Retreating _____

<500 _____

500-1600 _____

1601-3200 _____

>3200 _____

Full _____

Partial _____

Defilade _____

Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 37
Objective 12 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>		<u>CONTROLS</u>			
N _____	STAB _____	POWER _____	POWER	+	_____	
S <u>+</u> _____	POWER <u>+</u> _____	MANUAL	_____	_____	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____ + _____	_____ + _____	_____	_____	_____ + _____

TARGET CONDITIONS

		<u>TGT NO.</u>	
		Single	_____ + _____
		Multiple	_____
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>
	S _____	L to R _____	<500 _____
	<15kph <u>+</u> _____	R to L _____	500-1600 <u>+</u> _____
	15-30kph _____	Advancing <u>+</u> _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
Target No. 2	S _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
Target No. 3	S _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 38
Objective 13 Phase I

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	+ _____	+ _____	+ _____	+ _____	+ _____	+ _____

<u>TARGET CONDITIONS</u>				
			<u>TGT NO.</u>	
			Single	Multiple
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph + _____	R to L + _____	500-1600 + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed + _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

NOTE: Two fire control system failure categories are covered by engagement category 38.
They are:
. Periscope reticle & TTS & lead angle.
. Output unit or computer.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 42
Objective 14 Phase 1

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	_____	
S	<u>+</u>	POWER	<u>+</u>	MANUAL	<u>+</u>	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>ERF</u>
FUNCTION	_____	_____	_____	<u>+</u>	<u>+</u>	_____
MALFUNCTION	<u>+</u>	<u>+</u>	<u>+</u>	_____	_____	<u>+</u>

TARGET CONDITIONS

				<u>TGT NO.</u>	
				Single	_____
				Multiple	_____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>	
Target No. 1	S	L to R	<500	Full	
	<15kph <u>+</u>	R to L	500-1600	Partial	
	15-30kph	Advancing	1601-3200	Defilade <u>+</u>	
	>30kph	Retreating	>3200	Concealed	
Target No. 2	S	L to R	<500	Full	
	<15kph	R to L	500-1600	Partial	
	15-30kph	Advancing	1601-3200	Defilade	
	>30kph	Retreating	>3200	Concealed	
Target No. 3	S	L to R	<500	Full	
	<15kph	R to L	500-1600	Partial	
	15-30kph	Advancing	1601-3200	Defilade	
	>30kph	Retreating	>3200	Concealed	

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 43
Objective 15 Phase I

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____	
S _____ +	POWER _____ +				MANUAL _____ +	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____ +	_____ +	_____
MALFUNCTION	_____ +	_____ +	_____ +	_____	_____	_____ +

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single _____ +	Multiple _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____ +	500-1600 _____	Partial _____		
	15-30kph _____ +	Advancing _____	1601-3200 _____ +	Defilade _____ +		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 2	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 3	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		

PHASE II

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 7
Objective 16 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
N	_____	STAB	_____	POWER	_____ + _____	
S	_____ + _____	POWER	_____ + _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____ + _____	_____ + _____	_____ + _____	_____ + _____
MALFUNCTION	_____	_____ + _____	_____	_____	_____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	_____
					Multiple	_____ + _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S	_____ + _____	L to R	<500	Full _____ + _____	
	<15kph	_____	R to L	500-1600	Partial _____	
	15-30kph	_____	Advancing	1601-3200	Defilade _____	
	>30kph	_____	Retreating	>3200	Concealed _____	
Target No. 2	S	_____	L to R	<500	Full _____	
	<15kph	_____ + _____	R to L	500-1600	Partial _____	
	15-30kph	_____	Advancing	1601-3200	Defilade _____ + _____	
	>30kph	_____	Retreating	>3200	Concealed _____ + _____	
Target No. 3	S	_____	L to R	<500	Full _____	
	<15kph	_____	R to L	500-1600	Partial _____	
	15-30kph	_____	Advancing	1601-3200	Defilade _____	
	>30kph	_____	Retreating	>3200	Concealed _____	

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 8
Objective 17 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER <u>+</u> _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u> _____	<u>+</u> _____	_____	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____
MALFUNCTION	_____	_____	<u>+</u> _____	_____	_____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>
					Single _____
					Multiple <u>+</u> _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>	
Target No. 1	S _____	L to R _____	<500 _____	Full _____	
	<15kph <u>+</u> _____	R to L <u>+</u> _____	500-1600 <u>+</u> _____	Partial <u>+</u> _____	
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____	
	>30kph _____	Retreating _____	>3200 _____	Concealed _____	
Target No. 2	S _____	L to R _____	<500 _____	Full _____	
	<15kph _____	R to L <u>+</u> _____	500-1600 <u>+</u> _____	Partial _____	
	15-30kph <u>+</u> _____	Advancing _____	1601-3200 _____	Defilade <u>+</u> _____	
	>30kph _____	Retreating _____	>3200 _____	Concealed _____	
Target No. 3	S _____	L to R _____	<500 _____	Full _____	
	<15kph _____	R to L _____	500-1600 _____	Partial _____	
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____	
	>30kph _____	Retreating _____	>3200 _____	Concealed _____	

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 10
Objective 18 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	_____+	
S	_____+	POWER	_____+	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____+	_____	_____	_____+	_____+	_____+
MALFUNCTION	_____	_____+	_____+	_____	_____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	_____
					Multiple	_____+
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S	L to R	<500	Full		
	<15kph	R to L	500-1600	Partial		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating	>3200	Concealed		
Target No. 2	S	L to R	<500	Full		
	<15kph	R to L	500-1600	Partial		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating	>3200	Concealed		
Target No. 3	S	L to R	<500	Full		
	<15kph	R to L	500-1600	Partial		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating	>3200	Concealed		

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 11
Objective 19 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
N	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	+ _____
MALFUNCTION	+ _____	+ _____	+ _____	+ _____	+ _____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	_____
					Multiple	+ _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S	L to R	<500	Full	+ _____	
	<15kph	R to L	500-1600	Partial	_____	
	15-30kph	Advancing	1601-3200	Defilade	_____	
	+ _____	Retreating	>3200	Concealed	_____	
	>30kph					
Target No. 2	S	L to R	<500	Full	_____	
	<15kph	R to L	500-1600	Partial	+ _____	
	15-30kph	Advancing	1601-3200	Defilade	_____	
	+ _____	Retreating	>3200	Concealed	_____	
	>30kph					
Target No. 3	S	L to R	<500	Full	_____	
	<15kph	R to L	500-1600	Partial	_____	
	15-30kph	Advancing	1601-3200	Defilade	_____	
	+ _____	Retreating	>3200	Concealed	_____	
	>30kph					

NOTE: Two fire control system failure categories are covered by engagement category 11. They are:

- . Periscope reticle & TTS & lead angle.
- . Output unit or computer.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 15
Objective 20 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL <u>+</u> _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____
MALFUNCTION	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	_____	_____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>
					Single _____
					Multiple <u>+</u> _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>	
Target No. 1	S _____	L to R _____	<500 _____	Full _____	
	<15kph <u>+</u> _____	R to L _____	500-1600 <u>+</u> _____	Partial <u>+</u> _____	
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____	
	>30kph _____	Retreating <u>+</u> _____	>3200 _____	Concealed _____	
Target No. 2	S _____	L to R <u>+</u> _____	<500 _____	Full <u>+</u> _____	
	<15kph _____	R to L _____	500-1600 _____	Partial _____	
	15-30kph <u>+</u> _____	Advancing _____	1601-3200 <u>+</u> _____	Defilade _____	
	>30kph _____	Retreating _____	>3200 _____	Concealed _____	
Target No. 3	S _____	L to R _____	<500 _____	Full _____	
	<15kph _____	R to L _____	500-1600 _____	Partial _____	
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____	
	>30kph _____	Retreating _____	>3200 _____	Concealed _____	

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 27
Objective 21 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ +	
S _____ +	POWER _____ +				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ +	_____	_____ +	_____ +	_____ +	_____
MALFUNCTION	_____	_____ +	_____	_____	_____	_____ +

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
				<u>TGT NO.</u> Single _____ Multiple _____ +
Target No. 1	S _____ + <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ + 1601-3200 _____ >3200 _____	Full _____ + Partial _____ Defilade _____ Concealed _____
Target No. 2	S _____ + <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ + >3200 _____	Full _____ Partial _____ + Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 28
Objective 22 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER <u>+</u> _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u> _____	<u>+</u> _____	_____	<u>+</u> _____	<u>+</u> _____	_____
MALFUNCTION	_____	_____	<u>+</u> _____	_____	_____	<u>+</u> _____

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
				<u>TGT NO.</u> Single _____ Multiple <u>+</u> _____
Target No. 1	S _____ <15kph <u>+</u> _____ 15-30kph _____ >30kph _____	L to R <u>+</u> _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 <u>+</u> _____ 1601-3200 _____ >3200 _____	Full _____ Partial <u>+</u> _____ Defilade _____ Concealed _____
Target No. 2	S _____ <15kph _____ 15-30kph <u>+</u> _____ >30kph _____	L to R _____ R to L <u>+</u> _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 <u>+</u> _____ >3200 _____	Full <u>+</u> _____ Partial _____ Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 30
Objective 23 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>		<u>CONTROLS</u>			
M _____	STAB _____	POWER _____	POWER _____	MANUAL _____	COMPUTER _____	LRF _____
S <u>+</u> _____	POWER <u>+</u> _____	POWER <u>+</u> _____	MANUAL _____	COMPUTER _____	LRF _____	LRF _____
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u>	_____	_____	<u>+</u>	<u>+</u>	_____
MALFUNCTION	_____	<u>+</u>	<u>+</u>	_____	_____	<u>+</u>

TARGET CONDITIONS

		<u>TGT NO.</u>		
		Single _____	Multiple <u>+</u> _____	
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE (M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph <u>+</u> _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing <u>+</u> _____	1601-3200 <u>+</u> _____	Defilade <u>+</u> _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph <u>+</u> _____	R to L _____	500-1600 <u>+</u> _____	Partial <u>+</u> _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating <u>+</u> _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 31
Objective 24 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>		<u>CONTROLS</u>			
M _____	STAB _____		POWER _____ + _____			
S _____ + _____	POWER _____ + _____		MANUAL _____			
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____

TARGET CONDITIONS

			<u>TGT NO.</u>
			Single _____
			Multiple _____ + _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u> <u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____ Full _____
	<15kph _____ + _____	R to L _____ + _____	500-1600 _____ + _____ Partial _____ + _____
	15-30kph _____	Advancing _____	1601-3200 _____ Defilade _____
	>30kph _____	Retreating _____	>3200 _____ Concealed _____
Target No. 2	S _____	L to R _____ + _____	<500 _____ Full _____
	<15kph _____	R to L _____	500-1600 _____ Partial _____
	15-30kph _____ + _____	Advancing _____	1601-3200 _____ + _____ Defilade _____ + _____
	>30kph _____	Retreating _____	>3200 _____ Concealed _____
Target No. 3	S _____	L to R _____	<500 _____ Full _____
	<15kph _____	R to L _____	500-1600 _____ Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____ Defilade _____
	>30kph _____	Retreating _____	>3200 _____ Concealed _____

control system failure categories are covered by engagement category 31.

Periscope reticle & TTS & lead angle.

Output unit or computer.

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 34
Objective 25, Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____ + _____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____ + _____	_____	_____	_____	_____ + _____

TARGET CONDITIONS

				<u>TGT NO.</u> Single _____ Multiple _____ + _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____ + _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ + _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ + _____ Defilade _____ Concealed _____
Target No. 2	S _____ + _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ + _____ 1601-3200 _____ >3200 _____	Full _____ + _____ Partial _____ Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 35
Objective 26 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	_____+	
S	_____+	POWER	_____+	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____+	_____+	_____	_____+	_____+	_____
MALFUNCTION	_____	_____	_____+	_____	_____	_____+

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	_____
					Multiple	_____+
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S	L to R	<500	Full		
	<15kph	R to L	500-1600	Partial		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating	>3200	Concealed		
Target No. 2	S	L to R	<500	Full		
	<15kph	R to L	500-1600	Partial		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating	>3200	Concealed		
Target No. 3	S	L to R	<500	Full		
	<15kph	R to L	500-1600	Partial		
	15-30kph	Advancing	1601-3200	Defilade		
	>30kph	Retreating	>3200	Concealed		

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 37
Objective 27 Phase IIFIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____ + _____	_____ + _____	_____	_____	_____ + _____

TARGET CONDITIONS

				<u>TGT NO.</u>
				Single _____
				Multiple _____ + _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph _____ + _____	R to L _____	500-1600 _____ + _____	Partial _____ + _____
	15-30kph _____	Advancing _____ + _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____ + _____	500-1600 _____ + _____	Partial _____
	15-30kph _____ + _____	Advancing _____	1601-3200 _____	Defilade _____ + _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 38
Objective 28 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
				<u>TGT NO.</u> Single _____ Multiple _____ + _____
Target No. 1	S _____ <15kph _____ + _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ + _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ + _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ Concealed _____ + _____
Target No. 2	S _____ + _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ + _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ + _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ Concealed _____

NOTE: Two fire control system failure categories are covered by engagement category 38. They are:
 . Periscope reticle & TTS & lead angle.
 . Output unit or computer.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 42
Objective 29 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL <u>+</u> _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	<u>+</u> _____	<u>+</u> _____	_____
MALFUNCTION	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	_____	_____	<u>+</u> _____

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
				<u>TGT NO.</u> Single _____ Multiple <u>+</u> _____
Target No. 1	S _____ <15kph <u>+</u> _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing <u>+</u> _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 <u>+</u> _____ >3200 _____	Full _____ Partial _____ Defilade <u>+</u> _____ Concealed _____
Target No. 2	S _____ <15kph <u>+</u> _____ 15-30kph _____ >30kph _____	L to R _____ R to L <u>+</u> _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 <u>+</u> _____ >3200 _____	Full _____ Partial <u>+</u> _____ Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade _____ Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 43
Objective 30 Phase II

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>		<u>CONTROLS</u>			
M _____	STAB _____		POWER _____			
S <u>+</u> _____	POWER <u>+</u> _____		MANUAL <u>+</u> _____			
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	<u>+</u> _____	<u>+</u> _____	_____
MALFUNCTION	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	_____	_____	<u>+</u> _____

TARGET CONDITIONS

		<u>TGT NO.</u>		
		Single _____	Multiple <u>+</u> _____	
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE (M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L <u>+</u> _____	500-1600 _____	Partial _____
	15-30kph <u>+</u> _____	Advancing _____	1601-3200 <u>+</u> _____	Defilade <u>+</u> _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R <u>+</u> _____	<500 _____	Full _____
	<15kph <u>+</u> _____	R to L _____	500-1600 _____	Partial <u>+</u> _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

PHASE III

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 7
Objective 31 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER <u>+</u>	
S <u>+</u>	POWER <u>+</u>				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u>	_____	<u>+</u>	<u>+</u>	<u>+</u>	<u>+</u>
MALFUNCTION	_____	<u>+</u>	_____	_____	_____	_____

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
				<u>TGT NO.</u> Single _____ Multiple <u>+</u>
Target No. 1	S <u>+</u> <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 <u>+</u> 1601-3200 _____ >3200 _____	Full <u>+</u> Partial _____ Defilade _____ Concealed _____
Target No. 2	S _____ <15kph <u>+</u> 15-30kph _____ >30kph _____	L to R <u>+</u> R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 <u>+</u>	Full _____ Partial _____ Defilade <u>+</u> Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph <u>+</u> >30kph _____	L to R _____ R to L <u>+</u> Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 <u>+</u> >3200 _____	Full _____ Partial <u>+</u> Defilade _____ Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 8
Objective 32 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____ + _____	_____	_____ + _____	_____ + _____	_____ + _____
MALFUNCTION	_____	_____	_____ + _____	_____	_____	_____

TARGET CONDITIONS

		<u>TGT NO.</u>		
		Single _____	Multiple _____ + _____	
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph _____ + _____	R to L _____ + _____	500-1600 _____ + _____	Partial _____ + _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____ + _____	500-1600 _____ + _____	Partial _____
	15-30kph _____ + _____	Advancing _____	1601-3200 _____	Defilade _____ + _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____ + _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____ + _____	1601-3200 _____	Defilade _____
	>30kph _____ + _____	Retreating _____	>3200 _____ + _____	Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 10
Objective 33 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER _____ +	
S _____ +	POWER _____ +				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ +	_____	_____	_____ +	_____ +	_____ +
MALFUNCTION	_____	_____ +	_____ +	_____	_____	_____

TARGET CONDITIONS

				<u>TGT NO.</u>
				Single _____
				Multiple _____ +
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____ +	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____ +
	15-30kph _____ +	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____ +	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____ +	R to L _____	500-1600 _____	Partial _____ +
	15-30kph _____	Advancing _____	1601-3200 _____ +	Defilade _____
	>30kph _____	Retreating _____ +	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____ +
	<15kph _____	R to L _____ +	500-1600 _____	Partial _____
	15-30kph _____ +	Advancing _____	1601-3200 _____ +	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 11
Objective 34 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
N	_____	STAB	_____	POWER	_____ + _____	
S	_____ + _____	POWER	_____ + _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____ + _____
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	_____
					Multiple	_____ + _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S	L to R	<500	Full	_____ + _____	
	<15kph	R to L	500-1600	Partial	_____	
	15-30kph	Advancing	1601-3200	Defilade	_____ + _____	
	>30kph	Retreating	>3200	Concealed	_____	
Target No. 2	S	L to R	<500	Full	_____	
	<15kph	R to L	500-1600	Partial	_____ + _____	
	15-30kph	Advancing	1601-3200	Defilade	_____	
	>30kph	Retreating	>3200	Concealed	_____	
Target No. 3	S	L to R	<500	Full	_____	
	<15kph	R to L	500-1600	Partial	_____	
	15-30kph	Advancing	1601-3200	Defilade	_____ + _____	
	>30kph	Retreating	>3200	Concealed	_____	

NOTE: Two fire control system failure categories are covered by engagement category 11. They are:

- . Periscope reticle & TTS & lead angle.
- . Output unit or computer.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 15
Objective 35 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>				<u>CONTROLS</u>	
N	_____	STAB _____				POWER _____	
S	_____ + _____	POWER _____ + _____				MANUAL _____ + _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>	
FUNCTION	_____	_____	_____	_____ + _____	_____ + _____	_____ + _____	
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____	_____	_____	

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	Multiple
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____ + _____	R to L _____	500-1600 _____ + _____	Partial _____ + _____		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____ + _____	>3200 _____	Concealed _____		
Target No. 2	S _____	L to R _____ + _____	<500 _____	Full _____ + _____		
	<15kph _____	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____ + _____	Advancing _____	1601-3200 _____ + _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 3	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L _____ + _____	500-1600 _____	Partial _____ + _____		
	15-30kph _____ + _____	Advancing _____	1601-3200 _____ + _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 27
Objective 36 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____	_____ + _____	_____ + _____	_____ + _____	_____
MAFUNCTION	_____	_____ + _____	_____	_____	_____	_____ + _____

TARGET CONDITIONS

				<u>TGT NO.</u>
				Single _____
				Multiple _____ + _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____ + _____	L to R _____	<500 _____	Full _____ + _____
	<15kph _____	R to L _____	500-1600 _____ + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____ + _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____ + _____
	15-30kph _____	Advancing _____	1601-3200 _____ + _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____ + _____	500-1600 _____	Partial _____
	15-30kph _____ + _____	Advancing _____	1601-3200 _____ + _____	Defilade _____ + _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 28
Objective 37 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____ + _____	_____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____	_____ + _____	_____	_____	_____ + _____

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
				<u>TGT NO.</u> Single _____ Multiple _____ + _____
Target No. 1	S _____ <15kph _____ + _____ 15-30kph _____ >30kph _____	L to R _____ + _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ + _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ + _____ Defilade _____ Concealed _____
Target No. 2	S _____ <15kph _____ 15-30kph _____ + _____ >30kph _____	L to R _____ R to L _____ + _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ + _____ >3200 _____	Full _____ + _____ Partial _____ Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph _____ + _____ >30kph _____	L to R _____ + _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ + _____ >3200 _____	Full _____ + _____ Partial _____ Defilade _____ Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 30
Objective 38 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	+ _____	
S	+ _____	POWER	+ _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRP</u>
FUNCTION	+ _____	_____	_____	+ _____	+ _____	_____
MALFUNCTION	_____	+ _____	+ _____	_____	_____	+ _____

TARGET CONDITIONS

				<u>TGT NO.</u>	
				Single	_____
				Multiple	+ _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>	
Target No. 1	S	L to R	<500	Full	
	<15kph +	R to L	500-1600	Partial	
	15-30kph	Advancing +	1601-3200 +	Defilade +	
	>30kph	Retreating	>3200	Concealed	
Target No. 2	S	L to R	<500	Full	
	<15kph +	R to L	500-1600 +	Partial +	
	15-30kph	Advancing	1601-3200	Defilade	
	>30kph	Retreating +	>3200	Concealed	
Target No. 3	S	L to R +	<500	Full +	
	<15kph	R to L	500-1600	Partial	
	15-30kph +	Advancing	1601-3200 +	Defilade	
	>30kph	Retreating	>3200	Concealed	

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 31
Objective 39 Phase III

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER <u>+</u> _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____

<u>TARGET CONDITIONS</u>				
			<u>TGT NO.</u> Single _____ Multiple <u>+</u> _____	
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph <u>+</u> _____	R to L <u>+</u> _____	500-1600 <u>+</u> _____	Partial <u>+</u> _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R <u>+</u> _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph <u>+</u> _____	Advancing _____	1601-3200 <u>+</u> _____	Defilade <u>+</u> _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full <u>+</u> _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph <u>+</u> _____	Advancing <u>+</u> _____	1601-3200 <u>+</u> _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

NOTE: Two fire control system failure categories are covered by engagement category 31.
They are:
. Periscope reticle & TTS & lead angle.
. Output unit or computer.

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 34
Objective 40 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION.</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER <u>+</u>	
S <u>+</u>	POWER <u>+</u>				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u>	_____	<u>+</u>	<u>+</u>	<u>+</u>	_____
MALFUNCTION	_____	<u>+</u>	_____	_____	_____	<u>+</u>

TARGET CONDITIONS

			<u>TGT NO.</u>	
			Single _____	
			Multiple <u>+</u>	
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u>+</u>	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 <u>+</u>	Partial <u>+</u>
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S <u>+</u>	L to R _____	<500 _____	Full <u>+</u>
	<15kph _____	R to L _____	500-1600 <u>+</u>	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S <u>+</u>	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 <u>+</u>	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade <u>+</u>
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 35
Objective 41 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER <u>+</u>	
S <u>+</u>	POWER <u>+</u>				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u>	<u>+</u>	_____	<u>+</u>	<u>+</u>	_____
MALFUNCTION	_____	_____	<u>+</u>	_____	_____	<u>+</u>

TARGET CONDITIONS

		<u>TGT NO.</u>		
		Single _____	Multiple <u>+</u>	
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 <u>+</u>	Partial <u>+</u>
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full <u>+</u>
	<15kph _____	R to L _____	500-1600 <u>+</u>	Partial _____
	15-30kph <u>+</u>	Advancing <u>+</u>	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R <u>+</u>	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 <u>+</u>	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade <u>+</u>
	>30kph <u>+</u>	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 37
Objective 42 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER <u>+</u> _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	<u>+</u> _____	_____	_____	<u>+</u> _____	<u>+</u> _____	_____
MALFUNCTION	_____	<u>+</u> _____	<u>+</u> _____	_____	_____	<u>+</u> _____

TARGET CONDITIONS

		<u>TGT NO.</u>	
		Single _____	Multiple <u>+</u> _____
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>
	S _____	L to R _____	<500 _____
	<15kph <u>+</u> _____	R to L _____	500-1600 <u>+</u> _____
	15-30kph _____	Advancing <u>+</u> _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
Target No. 2	S _____	L to R _____	<500 _____
	<15kph _____	R to L <u>+</u> _____	500-1600 <u>+</u> _____
	15-30kph <u>+</u> _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
Target No. 3	S _____	L to R <u>+</u> _____	<500 _____
	<15kph _____	R to L _____	500-1600 <u>+</u> _____
	15-30kph <u>+</u> _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 38
Objective 43 Phase III

<u>FIRING TANK CONDITIONS</u>						
<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	_____ + _____	
S	_____ + _____	POWER	_____ + _____	MANUAL	_____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	_____	_____	_____
MALFUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____

<u>TARGET CONDITIONS</u>				
				<u>TGT NO.</u>
				Single _____
				Multiple _____ + _____
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE (M)</u>	<u>EXPOSURE</u>
	S _____	L to R _____	<500 _____	Full _____
	<15kph _____ + _____	R to L _____ + _____	500-1600 _____ + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____ + _____
Target No. 2	S _____ + _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____ + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____ + _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____ + _____	Partial _____ + _____
	15-30kph _____ + _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

NOTE: Two fire control system failure categories are covered by engagement category 38. They are:

- . Periscope reticle & TTS & lead angle.
- . Output unit or computer.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 42
Objective 44 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____	
S <u>+</u> _____	POWER <u>+</u> _____				MANUAL <u>+</u> _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	<u>+</u> _____	<u>+</u> _____	_____
MALFUNCTION	<u>+</u> _____	<u>+</u> _____	<u>+</u> _____	_____	_____	<u>+</u> _____

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	Multiple <u>+</u>
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
	S _____	L to R _____	<500 _____	Full _____		
	<15kph <u>+</u>	R to L _____	500-1600 _____	Partial _____		
	15-30kph _____	Advancing <u>+</u>	1601-3200 <u>+</u>	Defilade <u>+</u>		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 2	S _____	L to R _____	<500 _____	Full _____		
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 _____	Partial <u>+</u>		
	15-30kph _____	Advancing _____	1601-3200 <u>+</u>	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 3	S _____	L to R <u>+</u>	<500 _____	Full <u>+</u>		
	<15kph _____	R to L _____	500-1600 <u>+</u>	Partial _____		
	15-30kph <u>+</u>	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 43
Objective 45 Phase III

FIRING TANK CONDITIONS

<u>TANK MOTION</u>		<u>TURRET</u>		<u>CONTROLS</u>		
M	_____	STAB	_____	POWER	_____	
S	<u>+</u>	POWER	<u>+</u>	MANUAL	<u>+</u>	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____	_____	<u>+</u>	<u>+</u>	_____
MALFUNCTION	<u>+</u>	<u>+</u>	<u>+</u>	_____	_____	<u>+</u>

TARGET CONDITIONS

					<u>TGT NO.</u>	
					Single	_____
					Multiple	<u>+</u>
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>		
Target No. 1	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L <u>+</u>	500-1600 _____	Partial _____		
	15-30kph <u>+</u>	Advancing _____	1601-3200 <u>+</u>	Defilade <u>+</u>		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 2	S _____	L to R <u>+</u>	<500 _____	Full _____		
	<15kph <u>+</u>	R to L _____	500-1600 <u>+</u>	Partial <u>+</u>		
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		
Target No. 3	S _____	L to R _____	<500 _____	Full _____		
	<15kph _____	R to L <u>+</u>	500-1600 _____	Partial <u>+</u>		
	15-30kph <u>+</u>	Advancing _____	1601-3200 <u>+</u>	Defilade _____		
	>30kph _____	Retreating _____	>3200 _____	Concealed _____		

APPENDIX C

M60A1 STATIONARY FIRING TANK
ENGAGEMENT CATEGORIES

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 1

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u> </u>	<u>+</u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u> </u>	<u> </u>	<u> </u>

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 2

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u> </u>

NOTE: Enter superelevation manually.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 3

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u>+</u>
MALFUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u> </u>

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 4

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u> </u>

NOTES: 1. Two fire control system failure categories are covered by engagement category 4. They are:

.IR

.IR and computer

2. Preset (auto or manual) range and superelevation

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 5

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

IR

COMPUTER

PRIMARY SIGHT

SRF

FUNCTION

+

+

+

MALFUNCTION

+

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 9

FIRING TANK CONDITIONS

CONTROLS

POWER

MANUAL +

IR

COMPUTER

PRIMARY SIGHT

SRF

FUNCTION

 +

 +

 +

MALFUNCTION

 +

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 10

FIRING TANK CONDITIONS

CONTROLS

POWER

MANUAL +

IR

COMPUTER

PRIMARY SIGHT

SRF

FUNCTION

_____+

_____+

MALFUNCTION

_____+

_____+

NOTE: Enter superelevation manually.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 11

FIRING TANK CONDITIONS

CONTROLS

POWER _____

MANUAL + _____

IR

COMPUTER

PRIMARY SIGHT

SRF

FUNCTION

+ _____

+ _____

+ _____

MALFUNCTION

+ _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 12

FIRING TANK CONDITIONS

CONTROLS

POWER

MANUAL

+

IR

COMPUTER

PRIMARY SIGHT

SRF

FUNCTION

_____+

_____+

MALFUNCTION

_____+

_____+

NOTE: 1. Two fire control system failure categories are covered by engagement category 12. They are:

.IR

.IR and computer

2. Preset (auto or manual) range and superelevation.

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 13

FIRING TANK CONDITIONS

CONTROLS

POWER

MANUAL

+

IR

COMPUTER

PRIMARY SIGHT

SRP

FUNCTION

+

+

+

MALFUNCTION

+

APPENDIX D

M60A1 GUNNERY ENGAGEMENTS FOR CTT

PHASE I

PAGE D-2

PHASE II

PAGE D-13

PHASE I

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 1

Objective 1 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u> </u>	<u>+</u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u> </u>	<u> </u>	<u> </u>

TARGET CONDITIONS

			<u>TGT NO.</u>	
			Single <u>+</u>	
			Multiple <u> </u>	
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
	S <u>+</u>	L to R <u> </u>	<500 <u> </u>	Full <u>+</u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u>+</u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 2	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 3	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 2

Objective 2 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER +
MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u> </u>

TARGET CONDITIONS

TGT NO.
Single +
Multiple

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u>+</u> <15kph <u> </u> 15-30kph <u> </u> >30kph <u> </u>	L to R <u> </u> R to L <u> </u> Advancing <u> </u> Retreating <u> </u>	<500 <u> </u> 500-1600 <u>+</u> 1601-3200 <u> </u> >3200 <u> </u>	Full <u> </u> Partial <u>+</u> Defilade <u> </u> Concealed <u> </u>
Target No. 2	S <u> </u> <15kph <u> </u> 15-30kph <u> </u> >30kph <u> </u>	L to R <u> </u> R to L <u> </u> Advancing <u> </u> Retreating <u> </u>	<500 <u> </u> 500-1600 <u> </u> 1601-3200 <u> </u> >3200 <u> </u>	Full <u> </u> Partial <u> </u> Defilade <u> </u> Concealed <u> </u>
Target No. 3	S <u> </u> <15kph <u> </u> 15-30kph <u> </u> >30kph <u> </u>	L to R <u> </u> R to L <u> </u> Advancing <u> </u> Retreating <u> </u>	<500 <u> </u> 500-1600 <u> </u> 1601-3200 <u> </u> >3200 <u> </u>	Full <u> </u> Partial <u> </u> Defilade <u> </u> Concealed <u> </u>

NOTE: Enter superelevation manually

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 3

Objective 3 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u>+</u>
MALFUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u> </u>

TARGET CONDITIONS

TGT NO.
Single +
Multiple

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u> </u> <15kph <u>+</u> 15-30kph <u> </u> >30kph <u> </u>	L to R <u> </u> R to L <u> </u> Advancing <u>+</u> Retreating <u> </u>	<500 <u> </u> 500-1600 <u>+</u> 1601-3200 <u> </u> >3200 <u> </u>	Full <u>+</u> Partial <u> </u> Defilade <u> </u> Concealed <u> </u>
Target No. 2	S <u> </u> <15kph <u> </u> 15-30kph <u> </u> >30kph <u> </u>	L to R <u> </u> R to L <u> </u> Advancing <u> </u> Retreating <u> </u>	<500 <u> </u> 500-1600 <u> </u> 1601-3200 <u> </u> >3200 <u> </u>	Full <u> </u> Partial <u> </u> Defilade <u> </u> Concealed <u> </u>
Target No. 3	S <u> </u> <15kph <u> </u> 15-30kph <u> </u> >30kph <u> </u>	L to R <u> </u> R to L <u> </u> Advancing <u> </u> Retreating <u> </u>	<500 <u> </u> 500-1600 <u> </u> 1601-3200 <u> </u> >3200 <u> </u>	Full <u> </u> Partial <u> </u> Defilade <u> </u> Concealed <u> </u>

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 4

Objective 4 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	IR	COMPUTER	PRIMARY SIGHT	SRF
FUNCTION			+	+
MALFUNCTION	+	+		

TARGET CONDITIONS

TGT NO.

Single +

Multiple

	TGT MOTION	TGT DIRECTION	RANGE(M)	EXPOSURE
Target No. 1	S	L to R	<500	Full
	<15kph	R to L	500-1600 +	Partial
	15-30kph +	Advancing	1601-3200	Defilade
	>30kph	Retreating +	>3200	Concealed +
Target No. 2	S	L to R	<500	Full
	<15kph	R to L	500-1600	Partial
	15-30kph	Advancing	1601-3200	Defilade
	>30kph	Retreating	>3200	Concealed
Target No. 3	S	L to R	<500	Full
	<15kph	R to L	500-1600	Partial
	15-30kph	Advancing	1601-3200	Defilade
	>30kph	Retreating	>3200	Concealed

NOTES: 1. Two fire control system failure categories are covered by engagement category 4. They are:

.IR

.IR and computer

2. Preset (auto or manual) range and superelevation

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 5

Objective 5 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER +
MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRE</u>
FUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u>+</u>
MALFUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u> </u>

TARGET CONDITIONS

TGT NO.
Single +
Multiple

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u>+</u>
	<15kph <u> </u>	R to L <u>+</u>	500-1600 <u>+</u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u>+</u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 2	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 3	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 9

Objective 6 Phase 1

FIRING TANK CONDITIONS

CONTROLS

POWER

MANUAL

+

IR

COMPUTER

PRIMARY SIGHT

SRE

FUNCTION

+

+

+

MALFUNCTION

+

TARGET CONDITIONS

TGT NO.

Single

+

Multiple

	TGT MOTION	TGT DIRECTION	RANGE(M)	EXPOSURE
Target No. 1	S <u>+</u>	L to R	<500	Full <u>+</u>
	<15kph	R to L	500-1600 <u>+</u>	Partial
	15-30kph	Advancing	1601-3200	Defilade
	>30kph	Retreating	>3200	Concealed
Target No. 2	S	L to R	<500	Full
	<15kph	R to L	500-1600	Partial
	15-30kph	Advancing	1601-3200	Defilade
	>30kph	Retreating	>3200	Concealed
Target No. 3	S	L to R	<500	Full
	<15kph	R to L	500-1600	Partial
	15-30kph	Advancing	1601-3200	Defilade
	>30kph	Retreating	>3200	Concealed

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 10

Objective 7 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER _____

MANUAL +

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	_____	_____	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	_____	_____

TARGET CONDITIONS

			<u>TGT NO.</u>	
			Single <u>+</u>	
			Multiple _____	
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
	S _____	L to R _____	<500 _____	Full _____
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 <u>+</u>	Concealed <u>+</u>
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

NOTE: Enter superelevation manually.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 11

Objective 8 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER _____

MANUAL + _____

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u> _____	<u>+</u> _____	_____	<u>+</u> _____
MALFUNCTION	_____	_____	<u>+</u> _____	_____

TARGET CONDITIONS

TGT NO.
Single + _____
Multiple _____

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE (M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L <u>+</u> _____	500-1600 _____	Partial _____
	15-30kph <u>+</u> _____	Advancing _____	1601-3200 <u>+</u> _____	Defilade <u>+</u> _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 12

Objective 9 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER _____
MANUAL +

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	_____	_____	<u>+</u>	<u>+</u>
MAFUNCTION	<u>+</u>	<u>+</u>	_____	_____

TARGET CONDITIONS

			<u>TGT NO.</u> Single <u>+</u> Multiple _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>
Target No. 1	S _____	L to R _____	<500 _____
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 <u>+</u>
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
Target No. 2	S _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
Target No. 3	S _____	L to R _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____

NOTES: 1. Two fire control system failure categories are covered by engagement category 12. They are:

- . IR
- . IR and computer

2. Preset (auto or manual) range and superelevation.

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 13

Objective 10 Phase I

FIRING TANK CONDITIONS

CONTROLS

POWER

MANUAL +

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u>+</u>
MALFUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u> </u>

TARGET CONDITIONS

TGT NO.

Single +

Multiple

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u>+</u>	500-1600 <u>+</u>	Partial <u>+</u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 2	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 3	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>

PHASE II

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 1

Objective 11 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL +

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u>	<u>+</u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	<u>+</u>	<u>+</u>

TARGET CONDITIONS

			<u>TGT NO.</u> Single <u>+</u> Multiple <u>+</u>
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>
	S <u>+</u>	L to R <u>+</u>	<500 <u>+</u>
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 <u>+</u>
	15-30kph <u>+</u>	Advancing <u>+</u>	1601-3200 <u>+</u>
	>30kph <u>+</u>	Retreating <u>+</u>	>3200 <u>+</u>
Target No. 2	S <u>+</u>	L to R <u>+</u>	<500 <u>+</u>
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 <u>+</u>
	15-30kph <u>+</u>	Advancing <u>+</u>	1601-3200 <u>+</u>
	>30kph <u>+</u>	Retreating <u>+</u>	>3200 <u>+</u>
Target No. 3	S <u>+</u>	L to R <u>+</u>	<500 <u>+</u>
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 <u>+</u>
	15-30kph <u>+</u>	Advancing <u>+</u>	1601-3200 <u>+</u>
	>30kph <u>+</u>	Retreating <u>+</u>	>3200 <u>+</u>

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 2

Objective 12 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER +
MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u> </u>

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u>+</u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u>+</u>	Partial <u>+</u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 2	S <u> </u>	L to R <u>+</u>	<500 <u> </u>	Full <u>+</u>
	<15kph <u>+</u>	R to L <u> </u>	500-1600 <u>+</u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 3	S <u> </u>	L to R <u>+</u>	<500 <u> </u>	Full <u>+</u>
	<15kph <u>+</u>	R to L <u> </u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u>+</u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 3

Objective 13 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER +
MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u>+</u>
MAJFUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u> </u>

TARGET CONDITIONS

			<u>TGT NO.</u>	
			Single <u> </u>	
			Multiple <u>+</u>	
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u>+</u>
	<15kph <u>+</u>	R to L <u> </u>	500-1600 <u>+</u>	Partial <u> </u>
	15-30kph <u> </u>	Advancing <u>+</u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 2	S <u> </u>	L to R <u>+</u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u>+</u>	Defilade <u>+</u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 3	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u>+</u>	500-1600 <u> </u>	Partial <u> </u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u>+</u>	Defilade <u>+</u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>

FIRE DELIVERY METHOD: **BATTLESIGHT**

ENGAGEMENT CATEGORY: **4**

Objective 14 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u> </u>

TARGET CONDITIONS

			<u>TGT NO.</u>	
			Single <u> </u>	
			Multiple <u>+</u>	
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u>+</u>	Partial <u> </u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u>+</u>	>3200 <u> </u>	Concealed <u>+</u>
Target No. 2	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u>+</u>	500-1600 <u>+</u>	Partial <u>+</u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 3	S <u> </u>	L to R <u>+</u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u>+</u>	Partial <u> </u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u>+</u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>

NOTES: 1. Two fire control system failure categories are covered by engagement category 4. They are:

. IR

. IR and computer

2. Preset (auto or manual) range and superelevation.

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 5

Objective 15 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER +

MANUAL

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u>+</u>
MALFUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u> </u>

TARGET CONDITIONS

		<u>TGT NO.</u>	
		Single <u> </u>	Multiple <u>+</u>
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>
	S <u> </u>	L to R <u> </u>	<500 <u> </u>
	<15kph <u> </u>	R to L <u>+</u>	500-1600 <u>+</u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>
	>30kph <u>+</u>	Retreating <u> </u>	>3200 <u> </u>
Target No. 2	S <u> </u>	L to R <u>+</u>	<500 <u> </u>
	<15kph <u> </u>	R to L <u> </u>	500-1600 <u>+</u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>
Target No. 3	S <u> </u>	L to R <u> </u>	<500 <u> </u>
	<15kph <u>+</u>	R to L <u>+</u>	500-1600 <u>+</u>
	15-30kph <u> </u>	Advancing <u> </u>	1601-3200 <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 9

Objective 16 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER _____

MANUAL +

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	_____	<u>+</u>	<u>+</u>	<u>+</u>
MALFUNCTION	<u>+</u>	_____	_____	_____

TARGET CONDITIONS

			<u>TGT NO.</u> Single _____ Multiple <u>+</u>	
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u>+</u> <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 <u>+</u> 1601-3200 _____ >3200 _____	Full <u>+</u> Partial _____ Defilade _____ Concealed _____
Target No. 2	S <u>+</u> <15kph _____ 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 <u>+</u> 1601-3200 _____ >3200 _____	Full _____ Partial <u>+</u> Defilade _____ Concealed _____
Target No. 3	S _____ <15kph <u>+</u> 15-30kph _____ >30kph _____	L to R _____ R to L _____ Advancing _____ Retreating <u>+</u>	<500 _____ 500-1600 _____ 1601-3200 <u>+</u> >3200 _____	Full <u>+</u> Partial _____ Defilade _____ Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 10

Objective 17 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER _____

MANUAL + _____

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	_____	_____	<u>+</u> _____	<u>+</u> _____
MALFUNCTION	<u>+</u> _____	<u>+</u> _____	_____	_____

TARGET CONDITIONS

			<u>TGT NO.</u> Single _____ Multiple <u>+</u> _____	
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____ <15kph <u>+</u> _____ 15-30kph _____ >30kph _____	L to R _____ R to L <u>+</u> _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 <u>+</u> _____	Full _____ Partial _____ Defilade _____ Concealed <u>+</u> _____
Target No. 2	S _____ <15kph _____ 15-30kph _____ >30kph <u>+</u> _____	L to R <u>+</u> _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 <u>+</u> _____ >3200 _____	Full _____ Partial <u>+</u> _____ Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph <u>+</u> _____ >30kph _____	L to R _____ R to L <u>+</u> _____ Advancing _____ Retreating _____	<500 _____ 500-1600 <u>+</u> _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade <u>+</u> _____ Concealed _____

NOTE: Enter superelevation manually.

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 11

Objective 18 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER _____
MANUAL + _____

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u>	<u>+</u>	_____	<u>+</u>
MALFUNCTION	_____	_____	<u>+</u>	_____

TARGET CONDITIONS

TGT NO.
Single _____
Multiple + _____

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____ <15kph _____ 15-30kph <u>+</u> _____ >30kph _____	L to R _____ R to L <u>+</u> _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 <u>+</u> _____ >3200 _____	Full _____ Partial _____ Defilade <u>+</u> _____ Concealed _____
Target No. 2	S _____ <15kph <u>+</u> _____ 15-30kph _____ >30kph _____	L to R <u>+</u> _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 <u>+</u> _____ >3200 _____	Full _____ Partial <u>+</u> _____ Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph _____ >30kph <u>+</u> _____	L to R _____ R to L _____ Advancing <u>+</u> _____ Retreating _____	<500 _____ 500-1600 _____ 1601-3200 _____ >3200 <u>+</u> _____	Full <u>+</u> _____ Partial _____ Defilade _____ Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 12

Objective 19 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER _____

MANUAL + _____

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	_____	_____	<u>+</u> _____	<u>+</u> _____
MALFUNCTION	<u>+</u> _____	<u>+</u> _____	_____	_____

TARGET CONDITIONS

TGT NO.

Single _____
Multiple + _____

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE (M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____ <15kph <u>+</u> _____ 15-30kph _____ >30kph _____	L to R _____ R to L <u>+</u> _____ Advancing _____ Retreating _____	<500 _____ 500-1600 <u>+</u> _____ 1601-3200 _____ >3200 _____	Full _____ Partial <u>+</u> _____ Defilade _____ Concealed _____
Target No. 2	S _____ <15kph <u>+</u> _____ 15-30kph <u>+</u> _____ >30kph _____	L to R _____ R to L <u>+</u> _____ Advancing _____ Retreating _____	<500 _____ 500-1600 <u>+</u> _____ 1601-3200 _____ >3200 _____	Full _____ Partial <u>+</u> _____ Defilade _____ Concealed _____
Target No. 3	S _____ <15kph _____ 15-30kph <u>+</u> _____ >30kph _____	L to R <u>+</u> _____ R to L _____ Advancing _____ Retreating _____	<500 _____ 500-1600 <u>+</u> _____ 1601-3200 _____ >3200 _____	Full _____ Partial _____ Defilade <u>+</u> _____ Concealed _____

NOTES: 1. Two fire control system failure categories are covered by engagement category 12. They are:

- . IR
- . IR and computer

2. Preset (auto or manual) range and superelevation.

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 13

Objective 20 Phase II

FIRING TANK CONDITIONS

CONTROLS

POWER

MANUAL +

	<u>IR</u>	<u>COMPUTER</u>	<u>PRIMARY SIGHT</u>	<u>SRF</u>
FUNCTION	<u>+</u>	<u>+</u>	<u> </u>	<u>+</u>
MALFUNCTION	<u> </u>	<u> </u>	<u>+</u>	<u> </u>

TARGET CONDITIONS

			<u>TGT NO.</u>	
			Single <u> </u>	
			Multiple <u>+</u>	
Target No. 1	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u>+</u>	500-1600 <u>+</u>	Partial <u>+</u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 2	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u>+</u>	500-1600 <u> </u>	Partial <u>+</u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u>+</u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>
Target No. 3	S <u> </u>	L to R <u> </u>	<500 <u> </u>	Full <u> </u>
	<15kph <u> </u>	R to L <u>+</u>	500-1600 <u> </u>	Partial <u>+</u>
	15-30kph <u>+</u>	Advancing <u> </u>	1601-3200 <u> </u>	Defilade <u> </u>
	>30kph <u> </u>	Retreating <u> </u>	>3200 <u> </u>	Concealed <u> </u>

APPENDIX E
SPECIAL OBJECTIVES FOR M60A3 PRETEST

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 5

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____
MALFUNCTION	_____	_____	_____	_____	_____	_____

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
			<u>TGT NO.</u>	
			Single _____	
			Multiple _____ + _____	
Target No. 1	S _____ + _____	L to R _____	<500 _____	Full _____ + _____
	<15kph _____	R to L _____	500-1600 + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____ + _____	R to L _____ + _____	500-1600 _____	Partial _____ + _____
	15-30kph _____	Advancing _____	1601-3200 + _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____ + _____	Advancing _____ + _____	1601-3200 + _____	Defilade _____ + _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 6

FIRING TANK CONDITIONSTANK MOTION

M _____

S + _____TURRET

STAB _____

POWER + _____CONTROLSPOWER + _____

MANUAL _____

PERISCOPETTSLEADOUTPUTCOMPUTERLRF

FUNCTION

+ _____+ _____+ _____+ _____+ _____

MALFUNCTION

+ _____

TARGET CONDITIONSTGT NO.

Single _____

Multiple + _____

Target No. 1

TGT MOTION

S _____

<15kph + _____

15-30kph _____

>30kph _____

TGT DIRECTION

L to R _____

R to L + _____

Advancing _____

Retreating _____

RANGE(M)

<500 _____

500-1600 + _____

1601-3200 _____

>3200 _____

EXPOSURE

Full _____

Partial + _____

Defilade _____

Concealed _____

Target No. 2

S _____

<15kph _____

15-30kph + _____

>30kph _____

L to R _____

R to L _____

Advancing + _____

Retreating _____

<500 _____

500-1600 _____

1601-3200 + _____

>3200 _____

Full _____

Partial _____

Defilade + _____

Concealed _____

Target No. 3

S _____

<15kph _____

15-30kph _____

>30kph + _____

L to R _____

R to L _____

Advancing _____

Retreating + _____

<500 _____

500-1600 _____

1601-3200 _____

>3200 + _____

Full _____

Partial _____

Defilade _____

Concealed + _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 25

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
N _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____	_____	_____	_____	_____	_____ + _____

TARGET CONDITIONS

				<u>TGT NO.</u>
				Single _____
				Multiple _____ + _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
Target No. 1	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____ + _____	Advancing _____ + _____	1601-3200 _____ + _____	Defilade _____ + _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____ + _____	Retreating _____ + _____	>3200 _____ + _____	Concealed _____ + _____
Target No. 3	S _____ + _____	L to R _____	<500 _____ + _____	Full _____ + _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: PRECISION

ENGAGEMENT CATEGORY: 26

FIRING TANK CONDITIONSTANK MOTION

M _____

S + _____TURRET

STAB _____

POWER + _____CONTROLSPOWER + _____

MANUAL _____

PERISCOPETTSLEADOUTPUTCOMPUTERLRF

FUNCTION

+ _____+ _____+ _____+ _____

MALFUNCTION

+ _____

+ _____TARGET CONDITIONSTGT NO.

Single _____

Multiple + _____

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE (M)</u>	<u>EXPOSURE</u>
Target No. 1	S <u>+</u> _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 <u>+</u> _____	Defilade <u>+</u> _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S <u>+</u> _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 <u>+</u> _____	Defilade <u>+</u> _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S <u>+</u> _____	L to R _____	<500 _____	Full _____
	<15kph _____	R to L _____	500-1600 <u>+</u> _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade <u>+</u> _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 32

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>		<u>CONTROLS</u>			
M _____	STAB _____	POWER _____	POWER _____ + _____			
S _____ + _____	POWER _____ + _____	MANUAL _____				
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____ + _____
MALFUNCTION	_____	_____	_____	_____	_____	_____ + _____

TARGET CONDITIONS

			<u>TGT NO.</u>
			Single _____
			Multiple _____ + _____
	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>
Target No. 1	S _____	L to R _____ + _____	<500 _____
	<15kph _____ + _____	R to L _____	500-1600 _____ + _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
			<u>EXPOSURE</u>
			Full _____
			Partial _____ + _____
			Defilade _____
			Concealed _____
Target No. 2	S _____	L to R _____ + _____	<500 _____
	<15kph _____	R to L _____	500-1600 _____ + _____
	15-30kph _____ + _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
			Full _____ + _____
			Partial _____
			Defilade _____
			Concealed _____
Target No. 3	S _____	L to R _____	<500 _____
	<15kph _____ + _____	R to L _____ + _____	500-1600 _____ + _____
	15-30kph _____	Advancing _____	1601-3200 _____
	>30kph _____	Retreating _____	>3200 _____
			Full _____
			Partial _____
			Defilade _____ + _____
			Concealed _____

FIRE DELIVERY METHOD: BATTLESIGHT

ENGAGEMENT CATEGORY: 33

FIRING TANK CONDITIONS

<u>TANK MOTION</u>	<u>TURRET</u>				<u>CONTROLS</u>	
M _____	STAB _____				POWER _____ + _____	
S _____ + _____	POWER _____ + _____				MANUAL _____	
	<u>PERISCOPE</u>	<u>TTS</u>	<u>LEAD</u>	<u>OUTPUT</u>	<u>COMPUTER</u>	<u>LRF</u>
FUNCTION	_____	_____ + _____	_____ + _____	_____ + _____	_____ + _____	_____
MALFUNCTION	_____ + _____	_____	_____	_____	_____	_____ + _____

TARGET CONDITIONS

	<u>TGT MOTION</u>	<u>TGT DIRECTION</u>	<u>RANGE(M)</u>	<u>EXPOSURE</u>
			<u>TGT NO.</u>	
			Single _____	
			Multiple _____ + _____	
Target No. 1	S _____	L to R _____ + _____	<500 _____	Full _____
	<15kph _____ + _____	R to L _____	500-1600 _____ + _____	Partial _____ + _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 2	S _____	L to R _____ + _____	<500 _____	Full _____
	<15kph _____ + _____	R to L _____	500-1600 _____ + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____ + _____
	>30kph _____	Retreating _____	>3200 _____	Concealed _____
Target No. 3	S _____	L to R _____ + _____	<500 _____	Full _____ + _____
	<15kph _____	R to L _____	500-1600 _____ + _____	Partial _____
	15-30kph _____	Advancing _____	1601-3200 _____	Defilade _____
	>30kph _____ + _____	Retreating _____	>3200 _____	Concealed _____

APPENDIX F

FORMS

PERSONNEL REQUIREMENTS

(OSUT)

Please provide the information requested below for each person involved in the planning, development, conduct, and evaluation of the OSUT gunnery training program.

Name: _____ Rank/Grade: _____ MOS: _____

Function (See Note A)	Training Group (See Note B)	Role (P/S) (See Note C)	Time (hours) (See Note D)
Planning	IA: Baseline	_____	_____
	IIA: CTT	_____	_____
	IIIA: SRTS	_____	_____
Development	IA: Baseline	_____	_____
	IIA: CTT	_____	_____
	IIIA: SRTS	_____	_____
Conduct	IA: XMI Baseline	_____	_____
	IIA: CTT	_____	_____
	IIIA: SRTS	_____	_____
Evaluation	IA: Baseline	_____	_____
	IIA: CTT	_____	_____
	IIIA: SRTS	_____	_____

Note A: Planning includes scheduling, determining personnel and equipment requirements, logistics, etc.
Development includes writing and review of lesson plans, test materials, etc.
Conduct includes actual training and testing time during implementation.
Evaluation includes pre- and post-training testing and transfer study testing.

Note B: Group IA soldiers are trained by the current method only.
Group IIA soldiers are trained with the CTT.
Group IIIA soldiers are trained with the SRTS.

Note C: Primary (P) Role means the person directed or was responsible for major portions of work in that function.
Support (S) Role means the person assisted or was under the supervision of someone in a primary role.
If neither, leave blank.

Note D: If the time expended on a function is for more than one training group, record the time wherever applicable, and attach a note telling how many hours are recorded for more than one group and for which functions/groups they are recorded.

PERSONNEL REQUIREMENTS

(Sustainment)

Please provide the information requested below for each person involved in the planning, development, conduct, and evaluation of the sustainment gunnery training program.

Name: _____ Rank/Grade: _____ MOS: _____

Function (See Note A)	Training Group (See Note B)	Role (P/S) (See Note C)	Time (hours) (See Note D)
Planning	IB: Baseline	_____	_____
	IIB: CTT	_____	_____
	IIIB: UCFT	_____	_____
Development	IB: Baseline	_____	_____
	IIB: CTT	_____	_____
	IIIB: UCFT	_____	_____
Conduct	IB: XMI Baseline	_____	_____
	IIB: CTT	_____	_____
	IIIB: UCFT	_____	_____
Evaluation	IB: Baseline	_____	_____
	IIB: CTT	_____	_____
	IIIB: UCFT	_____	_____

Note A: Planning includes scheduling, determining personnel and equipment requirements, logistics, etc.
Development includes writing and review of lesson plans, test materials, etc.
Conduct includes actual training and testing time during implementation.
Evaluation includes pre- and post-training testing and transfer study testing.

Note B: Group IA soldiers are trained by the current method only.
Group IIA soldiers are trained with the CTT.
Group IIIA soldiers are trained with the UCFT.

Note C: Primary (P) Role means the person directed or was responsible for major portions of work in that function.
Support (S) Role means the person assisted or was under the supervision of someone in a primary role.
If neither, leave blank.

Note D: If the time expended on a function is for more than one training group, record the time wherever applicable, and attach a note telling how many hours are recorded for more than one group and for which functions/groups they are recorded.

GUNNERY TRAINING REPORT FORM
(OSUT)

Please provide the information requested below for each
gunner in the OSUT gunnery training program.

Training Group: Baseline _____
 CTT _____

 SRTS _____

GUNNER

Name: _____ Alpha No.: _____

<u>Objective/Exercise</u>	<u>Date/Time</u> <u>Started</u>	<u>Date/Time</u> <u>Mastered</u>	<u>Number</u> <u>of Tries</u>	<u>Total</u> <u>Time</u>
(List all objectives)	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____

			Total	_____
				.
				.
				.

CREW TRAINING REPORT FORM

(Sustainment)

Please provide the information requested below for each crew (gunner and tank commander) in the gunnery training program.

Training Group: Baseline _____ Crew Number: _____
CTT _____
UCOFT _____

GUNNER		TANK COMMANDER	
Name:		Name:	

Months as Gunner: _____ Months as TC: _____

Fired together in these crew positions? Yes _____ Number of Times: _____
No _____

<u>Objective/Exercise</u>	<u>Date/Time Started</u>	<u>Date/Time Mastered</u>	<u>Number of Tries</u>	<u>Total Time</u>
(List all objectives)	_____	_____	_____	_____
	_____	_____	_____	_____
	_____	_____	_____	_____
	•	•	•	•
	•	•	•	•
	•	•	•	•
			Total	_____

GUNNERY OBJECTIVE SCORESHEET (OSUT)

OBJECTIVE: _____ PROGRAM PHASE: _____

Tank Pre-Test (One Trial)

GUNNER: _____

Device Pretest (One Trial)

TRAINING GROUP: _____

Baseline

Training (Three Trials)

CTT

Device Posttest (One Trial)

SRTS

Comparison Test (Five Trials)

CRITERIA

TIME (Seconds)

Main Gun Engagements

MASTERY STANDARD	1	2	3	4	5
---------------------	---	---	---	---	---

Target to start fire command:

Start fire command to finish lay:

GNR "ID" to select ammo, lay, track, base:

GNR "NOT ID" to select ammo, lay, track, base:

TC "FIRE" to 1st rd. fired:

1st rd. impact on 2nd rd. fired (if miss):

1
0

AIMING ERROR - Main Gun

Div Fire

CTT

SRTS

Prec. - 1st Rd. Def. from center of mass

El. from center of mass

2nd Rd. Def. from center of mass

El. from center of mass

B-sight. - 1st Rd. Def. from base of target

El. from base of target

2nd Rd. Def. from base of target

El. from base of target

Live Fire

Main Gun: Mark 1 for 1st Rd. Hit, 2 for 2nd

Rd. Hit, 0 for No Hit:

GUNNERY OBJECTIVE SCORESHEET (Sustainment)

OBJECTIVE: _____ Program Phase: _____

Tank Pre-test (One Trial) CREW NUMBER: _____
 Device Pretest (One Trial) COMMANDER: _____
 Training (Three Trials) GUNNER: _____
 Device Posttest (One Trial) TRAINING GROUP: _____ Baseline
 Comparison Test (Five Trials) CTT _____
 _____ UCOFT _____

CRITERIA

TIME (Seconds) _____

Main Gun Engagements

Target to start fire command: _____
 Start fire command to finish lay: _____
 GNR "ID" to select ammo, lay, track, lase: _____
 GNR "Not ID" to select ammo, lay, track, lase: _____
 TC "FIRE" to 1st rd. fired: _____
 1st rd. impact on 2nd rd. fired (if miss): _____

MASTERY STANDARD

TRIAL

1	2	3	4	5
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

AIMING ERROR - Main Gun

Dev Fire _____

CTT _____

UCOFT _____

Prec. - 1st Rd. Def. from center of mass (mils) _____
 El. from center of mass (mils) _____
 2nd Rd. Def. from center of mass (mils) _____
 El. from center of mass (mils) _____

B-sight. - 1st Rd. Def. from base of target (mils) _____
 El. from base of target (mils) _____
 2nd Rd. Def. from base of target (mils) _____
 El. from base of target (mils) _____

Live Fire

Main Gun: Mark 1 for 1st Rd. Hit, 2 for 2nd
 Rd. Hit, 0 for NO Hit: _____